SIEMENS

Solaris™ Dome

CCDS1415-ST
CCDS1415-DN
CCDS1415-DNX

Configuration Manual

Fire Safety & Security Products

Siemens Building Technologies

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About this document

This manual provides the information you will need in order to install and configure a Solaris™ Dome unit. We recommend that you read through it at least once before you begin the installation.

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1 Functional description

Breaking away from the commonly available domes on the market the new Solaris™ Dome offers a level of accuracy, speed and configurability never experienced before. Solaris™ is available for both internal and external use so you can utilise your security system to the full. Underneath the contemporary styling of the Dome's cover is a fully featured camera unit designed to put the operator in full control.

Under manual control, pan and tilt speed is proportional to the degree of zoom allowing accurate target tracking, whilst high speed preset acquisition permits near instantaneous response to alarms. Solaris™ Domes include the following features:

– Colour and Day/Night versions both with 24 privacy masks.

– Pan and Tilt Preset acquisition within 1 second, Tours, Patterns, Preset and Sector texts.

– 7 local alarms and tamper.

Designed with reliability, ease of install and ease of use as priorities, Solaris™ comes with a range of innovative features. The unit is supplied as two halves - the Dome Unit containing the camera and positioning system, and the External Termination Unit (XTU).

The XTU separates the power, video, telemetry and alarm cable terminations from the Dome itself; and provides a low voltage power supply for the Dome contained within a weather-proof housing. Address and protocol selection is via a menu driven LCD display in the XTU, avoiding the issue of remembering switch and links settings. This means, for most applications the installer need never open the Dome camera's enclosure. A single 10 m cable is supplied to connect the XTU to the Dome unit.

Solaris™ is a multi-protocol Dome suitable for use with a range of industry standard control equipment. It can be controlled via Siemens CCDA protocol over RS485, bi-directional Molynx protocol over RS485 or coax, or alternatively using Ernitec, Pelco D, Pelco P or VCL, Videmech Universal, Photon and PCCON protocols over RS485. Once the receiver address, the protocol and interface have been configured using the XTU, all other configuration can be done remotely via the pass code protected on-screen display (OSD) menus.

Using the OSD Solaris™ Domes can be configured in flexible ways making them powerful security system components with:

– Configurable alarm and idle state time out actions

– Functions can also be assigned to preset numbers

– Programmable video launch amplifier

– On-screen diagnostics and usage stats

– Installer programmable on-screen text for contact details or inventory number

– Access to camera module configuration via OSD

2 Safety

2.1 Target readers

The instructions in this document are designed **only** for the following target readers:

Target readers	Qualification	Activity	Condition of the equipment
Start-up personnel	Appropriate professional training regarding the function and units or systems to be brought into operation.	Start-up personnel bring the unit or system which has been installed into operation on-site.	New, installed, rebuilt unit or system with malfunction.

2.2 General safety precautions

- Read the general safety precautions before operating the unit.
- Follow all warnings and instructions marked on the device.
- Keep this document available for reference.
- If the product is passed on to another party, include this document.

CAUTION	This device must be earthed. A readily accessible disconnect device shall be incorporated in the building installation wiring. As part of the building installation protect this device via a 3 A fuse or 3 A circuit breaker.

The Solaris™ Dome should be installed by competent, qualified personnel in accordance with the latest national standards.

These include:

- NACOSS National Approval Council for Security Systems
- NACP20 Code of Practice for installation and maintenance of Closed Circuit Television Systems
- IEE Requirements for Electrical Installations, BS 7671
- UK Data Protection Act 1998 - CCTV Data Protection Codes of Practice

Radio interference with other devices in the environment

This is a Class A device. This equipment may cause radio interference in a residential installation. In this case the user is encouraged to perform appropriate measures to correct the interference.

Liability claim

– Do not connect the device if any parts are missing or damaged.

– Do not make any changes or modifications to the device that are not mentioned in this manual and that have not been approved by the manufacturer.

– Use only spare parts and accessories that have been approved by the manufacturer.

Damage during transport

– Keep the packaging material for future transportation.

– Do not expose the device to mechanical vibrations or shocks.

Cable damage due to mechanical load

When connecting the cables, do not apply tensile force and make sure not to bend or damage them.

Damage due to unsuitable mounting location

– The environmental conditions recommended by the manufacturer must be observed. See Section: 4 Technical data.

– Do not operate the device close to sources of powerful electromagnetic radiation.

– Do not operate the device in excessively dusty places.

– Do not operate the device where it is exposed to mechanical vibrations.

Damage to the device due to overvoltage

Connect the device only to power sources with the specified voltage. Voltage supply requirements can be found on the power supply unit/type label. See Section: 4 Technical data.

Danger of electrical shock and damage to the device

Electrical grounding must meet the customary local safety regulations.

Data loss after update

Make sure to backup all data before updating the device.

Electric shock or fire hazard

Never insert objects through the openings on the device.

Danger of electrical shock during maintenance

Always disconnect the power cable and other cables from the main power supply before performing maintenance.

Danger of electrical shock while cleaning the device

– Disconnect the device from the mains supply before cleaning it.

– Do not use liquid cleaners or sprays that contain alcohol, spirit or ammonia.

2.3 Meaning of the signal words

The severity of a hazard is indicated by the following signal words. Ignoring these hazards may lead to the consequences indicated.

Signal word	Type of hazard
WARNING	Possible danger of death or severe bodily harm.
CAUTION	Danger of minor bodily injury or property damage
IMPORTANT	Danger of malfunctions

2.4 Meaning of the hazard symbols

The nature of the hazard is indicated by icons.

	Dangerous situation
	Electrical voltage

3 Guidelines and standards

3.1 EU directives

The product meets the requirements of the EU Directive 89/336/EEC on electromagnetic compatibility The EU declaration of conformity is available from:

Siemens Building Technologies
Fire & Security Products GmbH & Co. oHG
76181 Karlsruhe, Germany

EU Directive 89/336/EEC on electromagnetic compatibility

Conformity with the European Directive 89/336/EEC is demonstrated by compliance with the following standards:

Emitted interference:	EN 61000-6-3 EN 55022 Class B
Resistance to interference:	EN 50130-4

EU Directive 73/23/EEC „Low-Voltage Directive"

Compliance with the European Directive 73/23/EEC has been proven by testing according to the following standard:

Safety:	EN 60950-1

3.2 FCC compliance

This equipment has been tested and found to comply with the limits for a **Class A** digital device, pursuant to **Part 15 of the FCC Rules**. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference and the user may be required to correct this. Shielded cables should be used with this unit to ensure compliance with class A limits.

4 Technical data

4.1 Dome

Electrical	
Camera types	18x optical Colour (PAL): CCDS1415-ST 18x optical Day/Night (PAL): CCDS1415-DN 26x optical Day/Night (PAL): CCDS1415-DNX
Input voltage XTU	110 – 230 V AC @ 50 / 60 Hz, 1 A max.
In-rush current XTU	40 A / 20 A peak @ 110 / 230 V AC
Input voltage Dome unit	18-24 V DC @ 2 amp, supplied from the XTU via the Cat-5 cable
Connections	Video: BNC coax Power: Screw terminal block Telemetry: C type(Coax): BNC D type (Twisted Pair): Screw terminal block Alarm: Screw terminal block Relay: Screw terminal block Photon: Screw terminal block
Electromagnetic compatibility	Compliant with EMC directive 89/336/EC. Conforms to Part 15 of the FCC Rules, Class A digital device
Operational	
Pan speed	0.2-360°/sec
Pan travel	360° continuous
Tilt speed	0.2-360°/sec
Tilt travel	+10° and -100°
Presets	99
Tours	32 positions, fully programmable for sequence, dwell and speed
Preset accuracy	0.3°
Control hardware	SIMATRIX NEO, SIMATRIX SYS/648/164 via CAC0103, CKA3210, CKA4820, SISTORE AX, CX, MX, SX, Visilynx V3i, Visilynx II, Visilynx 2+, 6000 series, 600 series,
XTU video output	Nominal (no gain) VBS 1.0 Vp-p (sync negative)
Relay contact rating	1.5 A @ 24 V DC
Alarm input	Opto-coupled (short to alarm com.)
Mechanical	
Application	Indoor or outdoor - all models
Mounting	Wall/fixed ceiling, corner, wall top, pendant, pole, swan neck or ceiling tile
Pendant mount size/thread	Standard 1.5” BSP (parallel)
Weight	Boxed 5.6 kg, XTU only (no cables) 1.5 kg, DOME UNIT only (no cables) 2.5 kg
Ext. construction	Injection moulded polycarbonate (GE Lexan EXL9335)
Colour	Pure white RAL9010
Bubble	Smoked: CCDS1415-ST Clear:CCDS1415-DN / -DNX

Environmental	IP 67
Operating temperature	-10 to +40 °C (-20°C after unit has been powered up for 3 hours)
Storage temperature	-20 to +60 °C
MTBF	50,000 hrs (electric parts)

All specifications are subject to change without prior notice.

4.2 Camera module

	CCDS1415-DNX	CCDS1415-DN	CCDS1415-ST
Image sensor	1/4" type IT CCD (EX View HAD)		
Effective pixels PAL	430k		
Resolution PAL	480 TV lines		
Lens	26 x zoom 3.5 mm to 91 mm (F1.6 to F3.8)	18 x zoom 4.1 mm to 73.8 mm (F1.4 to F3.0)	
Digital zoom	12 x		
Angle of view	2.2° (tele) to 54.2° (wide)	2.7° (tele) to 48° (wide)	
Minimum object distance	320 mm (wide end), 1500 mm (tele end)	290 mm (wide end), 800 mm (tele end)	
Minimum illumination	0.05 lux (colour) 0.01 lux (mono)		0.05 lux (colour)
S/N ratio	>50 dB		
Electronic shutter	1/10000 s, 22 steps	1/1 to 10000 s, 22 steps	
White balance	Auto/One Push		
Gain	Auto (-3 to 28 dB, 2 dB steps)		
Focusing system	Manual/automatic		
Privacy zones	24		

5 Ordering information

Type	Part. No.	Designation
CCDS1415-DNX	2GF1194-8AD	¼" high-resolution Dome, 24 privacy zones, x26 zoom, colour/mono, clear bubble, IP67, supplied with 110 – 230 V AC XTU
CCDS1415-DN	2GF1194-8AC	¼" high-resolution Dome, 24 privacy zones, x18 zoom, colour/mono, clear bubble, IP67, supplied with 110 – 230 V AC XTU
CCDS1415-ST	2GF1194-8AA	¼" high-resolution Dome, 24 privacy zones, x18 zoom, colour, smoked bubble, IP67, supplied with 110 – 230 V AC XTU
CCDS1415-DH	2GF1194-8BA	Dummy Dome, IP67 (no camera or XTU)
CCDS1415-CH	2GF1194-8BB	Dome Housing for box camera, IP67 (no camera or XTU)
Accessories, not included in the delivery!		
CCDS1415-PM	2GF1194-8CA	Pendant mount
CCDS1415-FM	2GF1194-8CB	Recessed ceiling tile mount
CCDS1415-SN	2GF1194-8CC	Swan neck bracket
CCDS1415-WM	2GF1194-8CD	Wall /ceiling mount
CCDS1415-CMA	2GF1194-8CE	Corner mount adapter
CCDS1415-BM	2GF1194-8CF	Parapet mount adapter
CCDS1415-RTU	2GF1194-8CG	Remote Termination Unit (RTU)
Spare parts		
CCDS1415-XTU	2GF1194-8BC	External Termination Unit (XTU)
CCDS1415-BC	2GF1194-8BD	Clear bubble
CCDS1415-BS	2GF1194-8BE	Smoked bubble

6 Scope of delivery

Prior to installation confirm that the following are in the box:

- 1 x Solaris™ Dome unit
- 1 x External Termination Unit (XTU)
- 1 x Dome connection cable (Cat 5) with weatherproof connector
- 1 x installation manual
- 1 x cable gland pack (for XTU)
- 4 x cable ties (for XTU cable management)
- 5 mm AF Allen key
- 1.5” BSP knurled locking nut
- 2 x extra cable ties for connection cable
- Printed mounting instructions
- CD containing detailed configuration manuals

7 Unit description

A complete Solaris™ Dome system consists of a single sealed Dome unit (containing a camera fitted to a pan and tilt mechanism), connected by a Cat-5 cable to an External Termination Unit (XTU). The XTU contains a PSU and a PCB fitted with a variety of interface connection terminals.

The installation of a Solaris™ Dome consists of two parts:

- the installation of the Dome unit and
- the installation of the XTU.

The following chapter is concerned with the first of these. It will take you step by step through the various types of installation.

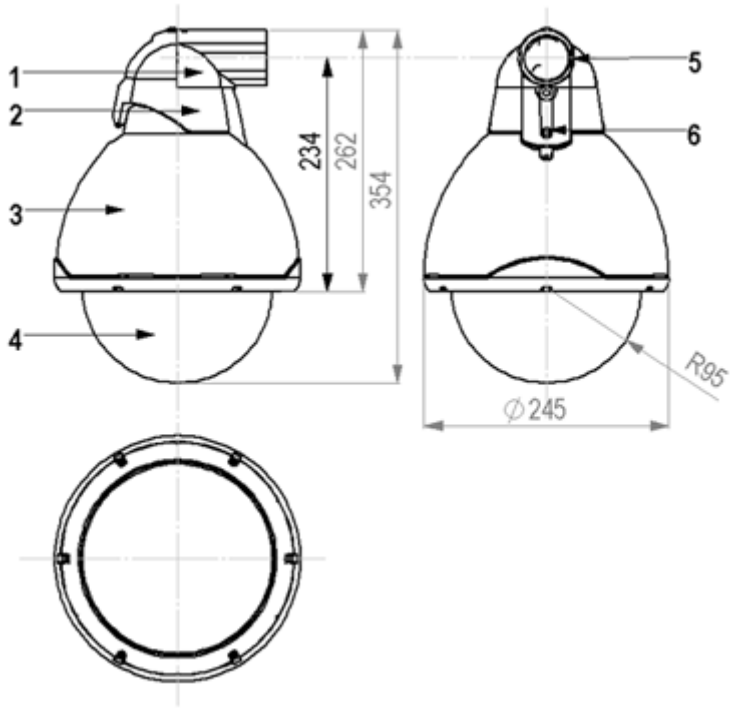


Fig. 1 Parts of the Solaris™ Dome

1	Mounting bracket (fixed horizontally or vertically)
2	Hinged bracket assembly
3	Dome
4	Bubble
5	1.5" BSP mounting thread
6	Screw for hinge assembly

8 Installation of the Dome unit

Before commencing use of the Solaris™ system, ensure the following has been completed:

1. Ensure you have the correct tools to complete the installation, (see Section 8.1: Tools required).
2. Install the desired bracket in a suitable location, (see Sections 8.3.1 to 8.3.6).
3. Prepare the Dome bracket and attach it to the appropriate mounting bracket, (see Sections 8.4: Preparing the Dome bracket and 0: Mounting the Dome bracket to a wall mount).
4. Assemble the Cat5 cable (see Section 8.5: Cat5 cable assembly and disassembly).
5. Hook the Dome on to the hinge mechanism and connect the cable, clipping it in place (ensure that it is correctly and firmly seated on the connector). Pull the Dome into the vertical position (see Section 8.6: Connecting the Solaris™ Dome).
6. Check the bubble and ensure there are no scratches on the surface. If the surface is marked, it may impair optical clarity.
7. Select a suitable location and mount the XTU, (see Sections 9.2.1: Choosing a location for the XTU and 9.2.2: Mounting the XTU).
8. Connect the XTU to any external equipment, (see Section 9.3: Connecting the XTU to external equipment).
9. If necessary, adjust the orientation of the XTU's LCD display, (see Section 10.2: LCD orientation).
10. Configure the XTU to use the correct telemetry protocol and to identify itself correctly, (see Section 10.3: The XTU main menu).
11. Setup the controller, (see Section 12: Telemetry controller operation and setup and the controller's installation and commissioning manual).

8.1 Tools required

Installing the Dome unit and the External Termination Unit requires only a basic tool kit, including:

- 3 mm AF Allen key (supplied with ceiling mounting kit)
- Medium sized Pozidrive screwdriver
- Terminal screwdriver (flat-bladed)
- RJ-45 crimping tool (only if custom Dome to XTU cable is used)
- Suitable tools for chosen fasteners for fitting bracketry and mounting the XTU
- Suitable tools to install the required cabling and connections

CAUTION	Handle the bubble of the Solaris™ Dome with extreme care and be sure not to scratch it, as this may affect its optical clarity. If it is accidentally marked it may be possible to remove small scratches or scuffs on the outer surface with the use of a suitable cloth and metal polish (brass cleaner). However, if this is not effective the bubble must be replaced.

8.2 Installation procedure

The two-piece mounting bracket and the hinge mechanism built into the Dome casing make the physical installation very simple.

Making the electrical connections is just as simple. All of these are provided via a single connector fitted to the Cat-5 cable supplied.

This just needs to be plugged in and clipped in place before the Dome casing is closed and fixed with a single screw. This combination ensures quick installation of the Dome.

Installation using the recessed ceiling tile mount utilises a simplified fixing procedure compared to other Domes and the electrical connections are just as simple as with the bracket and pendant mounted units.

Fig. 2 Cross-sectional view of the Solaris™ Dome

To install the dome unit, proceed as follows:

1. First install the appropriate mounting bracket. See Section 8.3: Installing the mounting brackets.
2. Prepare the Dome bracket. See Section 8.4: Preparing the Dome bracket.
3. Route the cable through the Dome bracket. See Section 8.5: Cat5 cable assembly and disassembly.
4. Connect the cable to the Dome unit. See Section 18.6: Connecting the Solaris™ Dome.
5. Attach the Dome to the Dome bracket.

8.3 Installing the mounting brackets

There are several types of brackets to choose from – wall/ceiling mount, corner mount adapter, parapet mount adapter, pendant mount, swan-neck bracket and recessed ceiling tile mount.

8.3.1 Wall/Ceiling mount CCDS1415-WM

Fig. 3 Ceiling mount

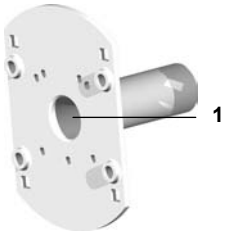
Fig. 4 Wall mount

Fig. 5 Wall / ceiling mount

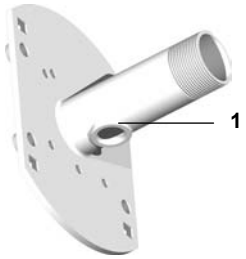
1. Bolt the wall/ceiling mount to the mounting substrate using the four mounting holes shown.

NOTE
Ensure the chosen fasteners and fastening method are suitable for the application and the mounting substrate.

Cable exits



1	Rear of plate



1	M25 electrical conduit threaded cable exit on the underside of the bracket

8.3.2 Corner mount adapter CCDS1415-CMA

1. Using 3 x M8 nuts and M8 x 20 bolts fasten the wall mount bracket to the corner mount adapter as shown below.
2. Fasten the corner mount adapter to the mounting substrate using the eight holes shown.

NOTE

Ensure the chosen fasteners and fastening method are suitable for the application and the mounting substrate.

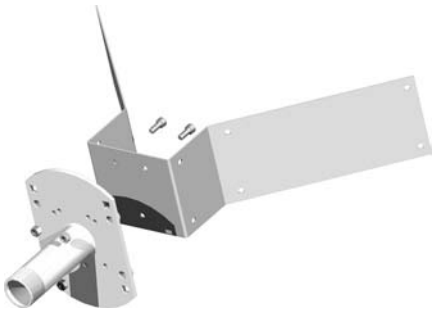


Fig. 6 Wall bracket in conjunction with corner mount adapter

Fig. 7 Solaris™ Dome mounted to wall bracket and corner mount adapter

8.3.3 Parapet mount adapter CCDS1415-BM

1. Fasten the wall mount to the parapet mount adapter using the four M8 bolts supplied with CCDS1415-BM (see below).
2. Fasten the parapet mount adapter to the mounting substrate using the four holes shown.

NOTE

Ensure the chosen fasteners and fastening method are suitable for the application and the mounting substrate.

Fig. 8 Wall bracket in conjunction with parapet mount adapter

Fig. 9 Solaris™ Dome mounted to wall bracket and parapet mount adapter

8.3.4 Pendant mount CCDS1415-PM

The pendant mount CCDS1415-PM is supplied with a 1.2 m pole.

1. Cut the unthreaded end of the pole to the desired length.
2. Slide the pole into the top of the mounting flange until level with the top face of the flange.
3. Spot drill the pole through the holes in the mounting flange.
4. Remove the pole and drill through both sides of the pole with a 9 mm drill.
5. Re-insert the pole and secure it using two M8 x 60 screws provided with the pendant mount.
6. Fasten the mounting flange to the mounting substrate using the three holes shown.

NOTE

Ensure the chosen fasteners and fastening method are suitable for the application and the mounting substrate.

Fig. 10 Pendant mount

8.3.5 Pole fixture (using wall mount CCDS1415-WM)

The wall mount CCDS1415-WM has four 12 mm square holes through the mounting plate. These holes are to pass 11 mm continuous banding through as shown.

NOTE
Ensure the chosen fasteners and fastening method are suitable for the application and the mounting substrate.

Fig. 11 Pole mounting

8.3.6 Recessed ceiling tile mount CCDS1415-FM

The Solaris™ Dome can be installed in a standard false ceiling tile using the recessed ceiling tile mount. The recessed ceiling tile mount consists of two accessory mounting brackets that are fixed to the Solaris™ Dome, and two U-channel brace bars which are secured to the ceiling support framework. The brace bars are suitable for use with both 600x600 mm and 600x1200 mm ceiling tile systems.

To install the recessed ceiling tile mount you will need access to the top of the tile from one or more adjacent tiles.

Install using the recessed ceiling tile mount as follows:

1. Prepare the ceiling tile by cutting a 235 mm diameter hole in the centre (using the template provided) and then fit it back in place in the ceiling support frame.
2. Remove the six screws holding the Solaris™ Dome's bezel in place and remove the bezel.

NOTE
Handle the bubble of the Solaris™ Dome with extreme care and be sure not to scratch it, as this may affect its optical clarity.

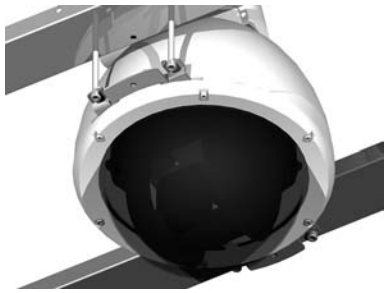
3. Fit the ceiling mount accessory brackets in place using the four self-tapping screws provided.

4. Refit the bezel; tighten the six screws lightly to begin with, and then fully tighten each in turn.

NOTE

Ensure that the six screws are sufficiently tight to compress the bubble seal (recommended torque setting 1.2 - 1.3 Nm).

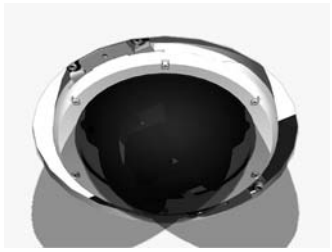
5. Fit the brace bars to the accessory brackets using the support screws provided.



NOTE

The recessed ceiling tile mount is for use with standard thickness ceiling tiles. If using non-standard thickness ceiling tiles, it may be necessary to use different support screws (not supplied) to mount the brace bars onto the accessory brackets.

6. Lower the complete assembly into place, allowing the Dome to pass through the hole in the ceiling tile.



7. Ensure that the brace bar is correctly located on the support framework and then fix it using the screws provided.
8. Fit the supplied bezel.

NOTE

The Dome can be lowered or raised depending on the situation by adjusting the height of the support screws.

9. Connect the cable connector to the socket.

➔ The ceiling tile installation is now complete.

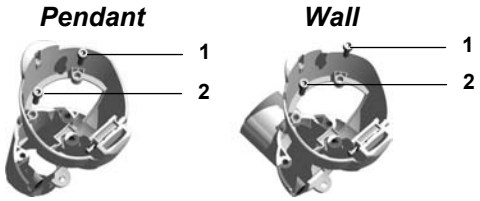
8.4 Preparing the Dome bracket

The Dome bracket is provided with a standard 1.5" BSP thread and stainless steel lock nut to enable it to be used with a range of standard mounting hardware. The bracket is constructed of two parts, which can be turned in respect of each other to allow for a vertical or horizontal mounting arrangement.

To prepare the bracket for mounting the Dome:

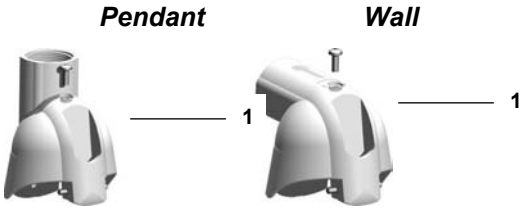
1. Orientate the two parts of the bracket correctly.

2. Fix them together using the three screws provided.



1, 2	Screw

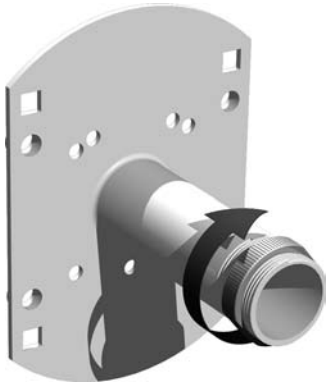
3. Screw the bracket on to the end of the mounting tube, locking into place with the grub screw.



1	Screw

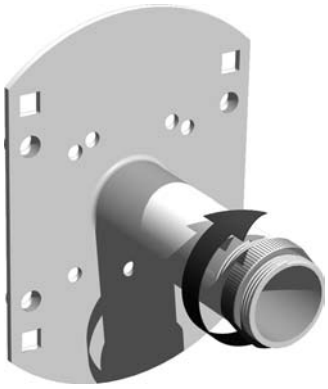
Mounting the Dome bracket to a wall mount

4. Screw the locknut onto the bracket, to the back of the thread.



5. Screw the Dome bracket onto the wall mount and position it correctly. A minimum of four turns will be sufficient.

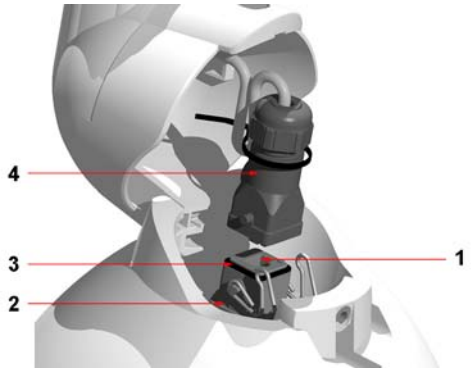
6. Lock the Dome bracket into position by back-tightening the locknut and locking it against the face of the Dome bracket. Hand tight will be sufficient.

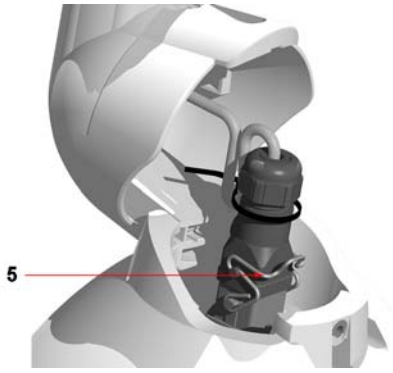


8.5 Cat5 cable assembly and disassembly

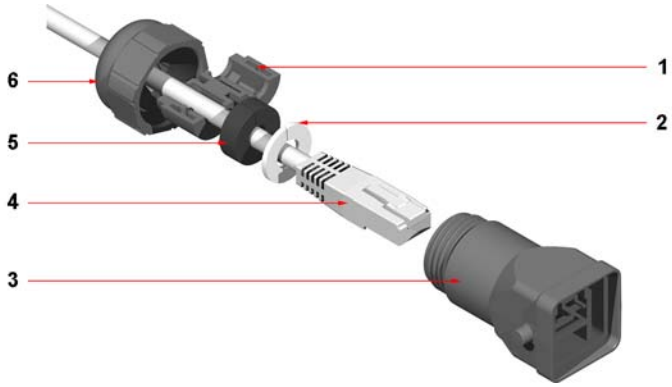
Solaris™ is supplied with a 10 m preassembled Cat 5 cable. In some cases, it may be necessary to change the cable (for a shorter cable or to replace a damaged cable, for example). It is very important that the cable assembly is assembled / disassembled in the following manner, to ensure a watertight seal between the connector and the Dome unit.

IMPORTANT	The Solaris™ Dome will **not** be fully water protected if these **vital** checks are not made prior to finalising the installation.





1	Label
2	Seal 2
3	Seal 1
4	Connector
5	Spring-clip



1	Compression Clamp
2	Plastic Washer
3	Connector Body
4	Cat 5 Cable Assembly
5	Rubber Washer
5	Rubber Washer
6	Locking Nut

1. Ensure that the **connector** is assembled as per the overview below. Ensure that the locking nut is sufficiently tight to seal the assembly. Full assembly instructions can be found in the Installation Manual.
2. Ensure that **Seal 1** is present and fitted correctly.
3. Ensure that **Seal 2** is present and fitted correctly.
4. Remove the **Label** adhered to the Solaris™ connector.
5. Make the connection.
6. Ensure that the **spring-clip** securely fastens and locks the connector to the Solaris™ Dome.

➔ This will ensure that Solaris™ is waterproof

8.5.1 Assembly

1. Pass the connector locking nut over the RJ45 plug.

2. Pass the RJ45 plug from the rear of the connector body and engage the plug into the body.

Ensure that the plug fully engages, i.e. ‘clicks’ into position within the body. When fully engaged, the cable will not be able to be retracted from the body when pulled.

3. Fit the plastic washer. Take care not to damage the cable.

4. Fit the rubber washer.

5. Split the compression clamp, orientation as shown.

6. Clamp around the cable. Take care not to damage the cable.

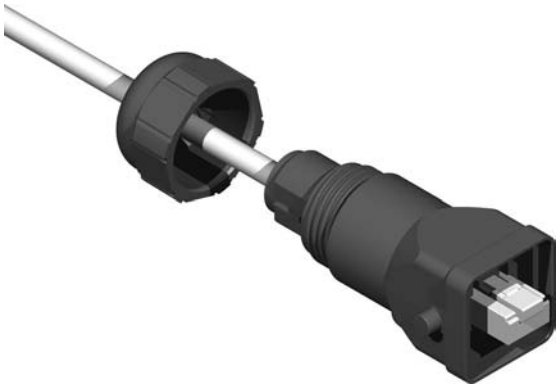
7. Complete the connector assembly by sliding all parts into the connector body and hand tightening the locking nut. Sufficient force must be applied to the locking nut to compress the rubber washer, thus sealing the assembly. When sufficiently tight hold the assembly to a light source; if correctly sealed, light will not be seen though it. If light can be seen, hand tighten with more force.

8. Finally, loop the cable as shown.

9. Lock the cable in position with the cable tie provided. This ‘loop and tie’ will divert water that runs down the cable away from the connector assembly.

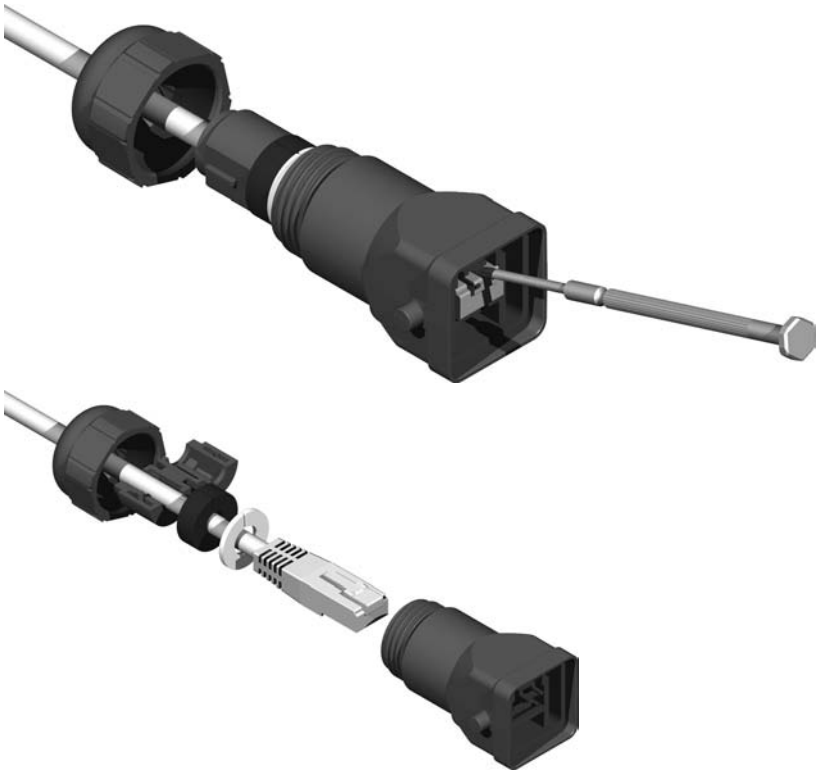
8.5.2 Disassembly

1. Cut away the cable tie and un-loop the cable. Unscrew the locking nut.



2. Using a small tool (screwdriver, pen, etc.) carefully disengage the RJ45 plug from the connector body.

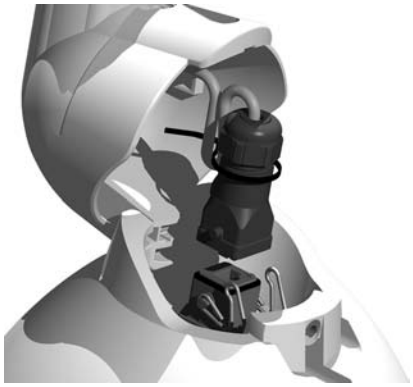
3. Carefully pull the RJ45 plug away from the body by gently pulling on the cable.



8.6 Connecting the Solaris™ Dome

1. Offer the Dome up to the mounting bracket and hook it on to the hinge mechanism. The hinge should now take the weight of the Dome, leaving your hand free to make the connection.
2. Remove the dust cap. It is held to the unit with a lanyard so it will not be misplaced. Position the dust cap loosely to the side of the bulkhead connector.

3. Feed the cable through the opening.
4. Fit the connector's locking clip to ensure a watertight seal.



5. Pull the Dome unit into the vertical position (taking care that the cable doesn't snag) and lock it into place with the fixing screw.

➔ The installation of the Dome is now complete.

9 Installation of the External Termination Unit (XTU)

This chapter covers the physical and electrical installation of the Solaris™ Dome's External Termination Unit (XTU).

NOTE
The XTU is patent pending.

9.1 Unit description

The External Termination Unit (XTU) is an IP67 sealed enclosure containing the Dome unit's power supply, telemetry interface, alarm/relay connections, video conditioning and protocol conversion.

The advantages of this separate XTU enclosure include:

- Ease of setup and installation of the Dome unit
- Single connection cable to the Dome unit
- All other connections are made to the XTU
- Ease of access for maintenance

The XTU allows the Dome to be controlled via:

- Coaxial telemetry (see Section 9.4.1: XTU connections - coaxial (C-type) telemetry).
- RS485 telemetry (see Section 9.4.2: XTU connections - RS485 (D-type) telemetry).
- Photon telemetry (see Section 9.4.3: XTU connections - Photon telemetry).

9.2 Installation procedure

Fig. 12 External Termination Unit (XTU)

The XTU is very straightforward to install; these are the basic steps required:

1. Select a suitable location for the installation to allow the most suitable access to the required cabling (power, telemetry, alarms etc.) and the Dome. See Section 9.2.1: Choosing a location for the XTU.
2. Select the appropriate cable glands for the cabling/connections to be used and remove the required knockouts in the enclosure.

3. Mount the XTU in the selected position and orientation using appropriate fasteners for the mounting substrate. See Section 9.2.2: Mounting the XTU.
4. Set the RS485 termination resistor if required.
5. Route and connect all of the required cabling to the XTU (use the supplied special M20 split rubber cable gland for the Dome connection cable)
6. Power up the XTU.
7. Orientate the LCD display to suit the mounted position.
8. Set-up the XTU to operate correctly with your chosen controller, set the protocol (e.g. MOLYNX V3), set the interface (e.g. RS485 or Coax control), set the receiver address (e.g. camera '1'). See Section 12: Telemetry controller operation and setup.
9. Optional video test. Press the key, the XTU LCD should display a digitised view of what the Dome camera is pointing at.
   Press the key to resume normal operation.
10. After the XTU has been fully set-up fit the lid on the XTU securely using the 4 lid mounting screws to ensure a weatherproof seal.

9.2.1 Choosing a location for the XTU

The XTU should be located in a position which allows the most suitable and convenient routing and connection of the required cabling. Factors to consider are the proximity to the Dome unit (10 m cable supplied as standard, extendable to 30 m maximum), power supply, connections to telemetry controller, alarms and the security/protection of the chosen location. The XTU is fitted with a tamper switch that is activated upon opening of the enclosure, but the enclosure itself is not tamper-proof.

If a cable longer than 10 m is required, it can be increased to 30 m maximum, using Cat-5e UTP 4 pair 24 AWG type cable. Ensure the correct coloured wires are wired to the correct pins (see Section 9.5: Wiring guide).

9.2.2 Mounting the XTU

Once a suitable location has been found, mark the positions of the four mounting holes at 235 mm x 160 mm. The mounting holes in the enclosure have a diameter of 4.5 mm, so select fasteners to suit this and drill holes to match the chosen fasteners and mounting substrate. The head of the fasteners used should not exceed 9 mm in diameter.

IMPORTANT To ensure that the unit is weatherproof (IP67) the cable glands must point downwards.

Remove the required gland knockouts by punching through the plastic around the edge of the knockouts using a small screwdriver. Knockouts are available in the enclosure for the following metric cable glands:

– 7 x M12/M20

– 2 x M16/M25

Offer the enclosure up to the mounting holes and fix in place with the chosen fasteners.

9.3 Connecting the XTU to external equipment

Make the necessary connections to the XTU referring to the diagrams in Section 9.4.1: XTU connections - coaxial (C-type) telemetry, Section 9.4.2: XTU connections - RS485 (D-type) telemetry, and Section 9.4.3: XTU connections - Photon telemetry, depending on your installation, the markings on the XTU PCB and the connection list below.

These connections will vary between each installation, and as such there will be varying requirements for the number of connections, connection type and sealing requirements. It is the installer's responsibility to ensure that the correct cable glands are used for the cable type utilised to provide a weatherproof seal. The IP class of the cable glands used for cable entries should be higher or the same as that of the enclosure (IP67).

A selection of cable glands are supplied with the XTU:

- 1 x M20 standard IP68 cable gland - for cables with diameter 10-14 mm (tighten to 3.3 Nm for IP68).
- 1 x M20 special IP68 cable gland - for use with the Dome connection cable (tighten to 3.3 Nm for IP68).
- 2 x M12 standard IP68 cable glands - for cables with diameter 3-6 mm (tighten to 1.7 Nm for IP68).

Cable ties are also supplied with the XTU to be used to provide additional strain relief for the cables by securing them to the punched out anchors in the XTU mounting plate.

NOTE
All wiring to the XTU should be carried out by a qualified installer and conform to local regulations.

9.4 Description of the connections

AC input [REQUIRED]

Must be 110-230 V AC, use the strain relief to secure mains cable.

A readily accessible disconnect device shall be incorporated in the building installation wiring.

This device **must** be earthed.

As part of the installation protect this device via a 3 A fuse or 3 A circuit breaker.

Coax cable to controller [REQUIRED]

Connect to the controller, video and C-type telemetry pass through this connection. The cable should be a 75 Ohm CCTV cable URM70, RG59, CT125, etc.

NOTE
The higher the quality of the cable, the further the XTU can be from the controller whilst maintaining good video quality.

Dome connection cable [REQUIRED]

The supplied Dome connection cable is 10 m long, and is fitted at both ends with a standard RJ45 connector. The Dome end should be connected using the supplied weatherproof connector, the XTU end should be connected to the RJ45 connector.

A special split rubber M20 cable gland for use on the XTU end of the Dome connection cable is supplied, this allows a weatherproof seal to be made on the cable without having to pass the RJ45 connector through the sealing rubber. See Section 9.5: Wiring guide.

Twisted pair from controller [OPTIONAL]

D-type (RS485) telemetry should be connected to this terminal, the cable type should be a suitable twisted-pair cable 100-120 Ohms designed for high-speed communication purposes, e.g. Belden 8205.

The two extremities of the RS485 network should be terminated. Generally this will be the last Dome and the control equipment. LNK1 on the XTU will perform termination and should be either ‘made’ which is terminated or ‘open’ which is un-terminated.

Alarm contacts [OPTIONAL]

Connection to these alarm inputs must be from volt free contacts, connect from ALM1 to COM, ALM2 to COM, …, ALM7 to COM as shown in the XTU connection diagram. Example use - point the Dome camera module to a chosen preset when a PIR device is triggered.

Relay outputs [OPTIONAL]

Use the outputs COM to N/O and/or N/C to control an auxiliary device, such as an alarm system.

Warning: 1.5 A, 24 V DC max.

2-core telemetry cable from Photon controller [OPTIONAL]

Connect to this terminal if Photon telemetry is to be used (not polarised).

9.4.1 XTU connections - coaxial (C-type) telemetry

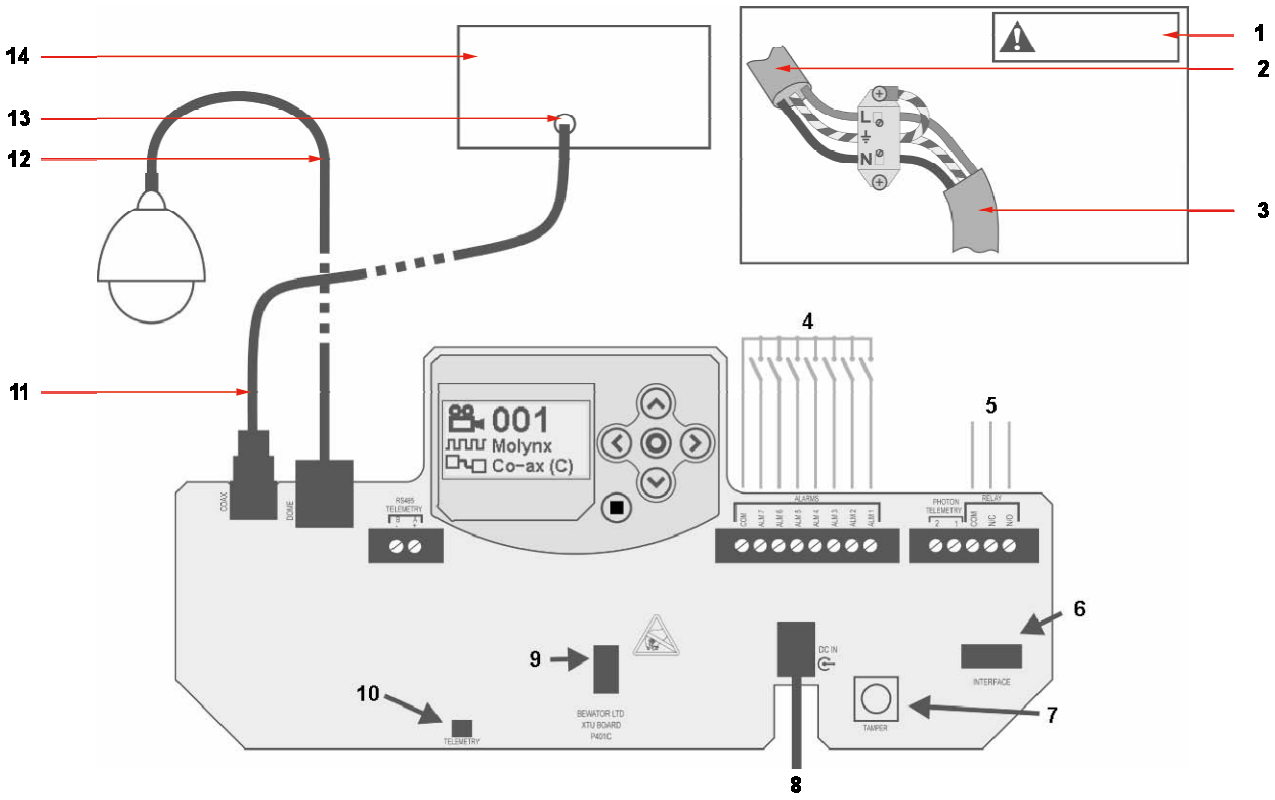


Fig. 13 Coaxial (C-type) telemetry

1	**CAUTION** This device must be earthed. A readily accessible disconnect device shall be incorporated in the building installation wiring. As part of the building installation protect this device via a 3 A fuse or 3 A circuit breaker.
2	AC mains Input
3	AC mains to PSU
4	Alarm contacts
5	Relay output to user equipment (e.g. alarm system) 1.5 A, 24 V DC max.
6	Interface connector (do not use)
7	Tamper switch
8	From PSU
9	Programming header (do not use)
10	Telemetry indicator
11	Coax cable (video to & telemetry from controller)
12	Dome unit
13	Dome connection cable
14	Camera input / telemetry output
15	Telemetry controller

9.4.2 XTU connections - RS485 (D-type) telemetry

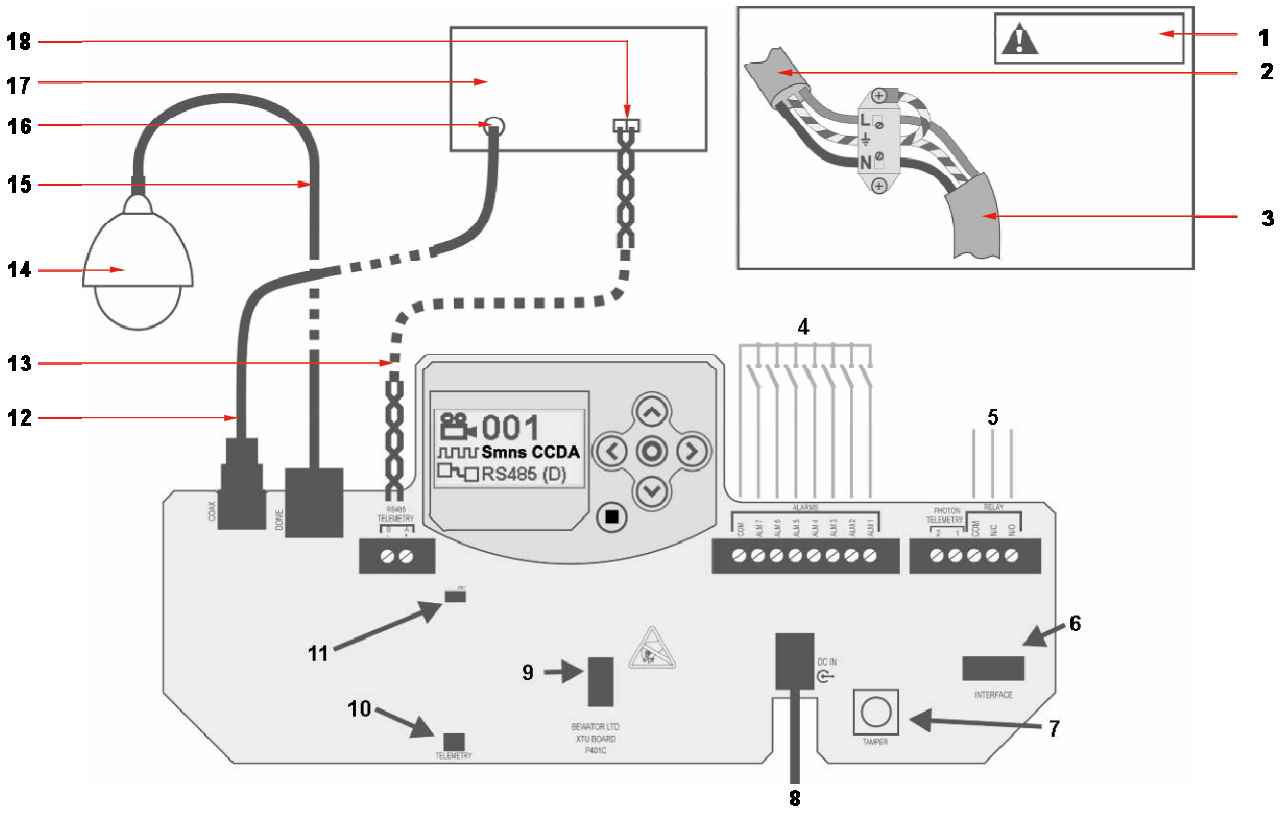


Fig. 14 RS485 (D-type) telemetry

1	**CAUTION** This device must be earthed. A readily accessible disconnect device shall be incorporated in the building installation wiring. As part of the building installation protect this device via a 3 A fuse or 3 A circuit breaker.
2	AC mains input
3	AC mains to PSU
4	Alarm contacts
5	Relay output to user equipment (e.g. alarm system) 1.5 A, 24 V DC max.
6	Interface connector (do not use)
7	Tamper switch
8	From PSU
9	Programming head (do not use)
10	Telemetry indicator
11	RS485 telemetry termination link
12	Coax cable (video to controller)
13	Twisted pair telemetry cable
14	Dome unit
15	Dome connection cable
16	Camera input
17	Telemetry controller
18	RS 485 telemetry output

9.4.3 XTU connections - Photon telemetry

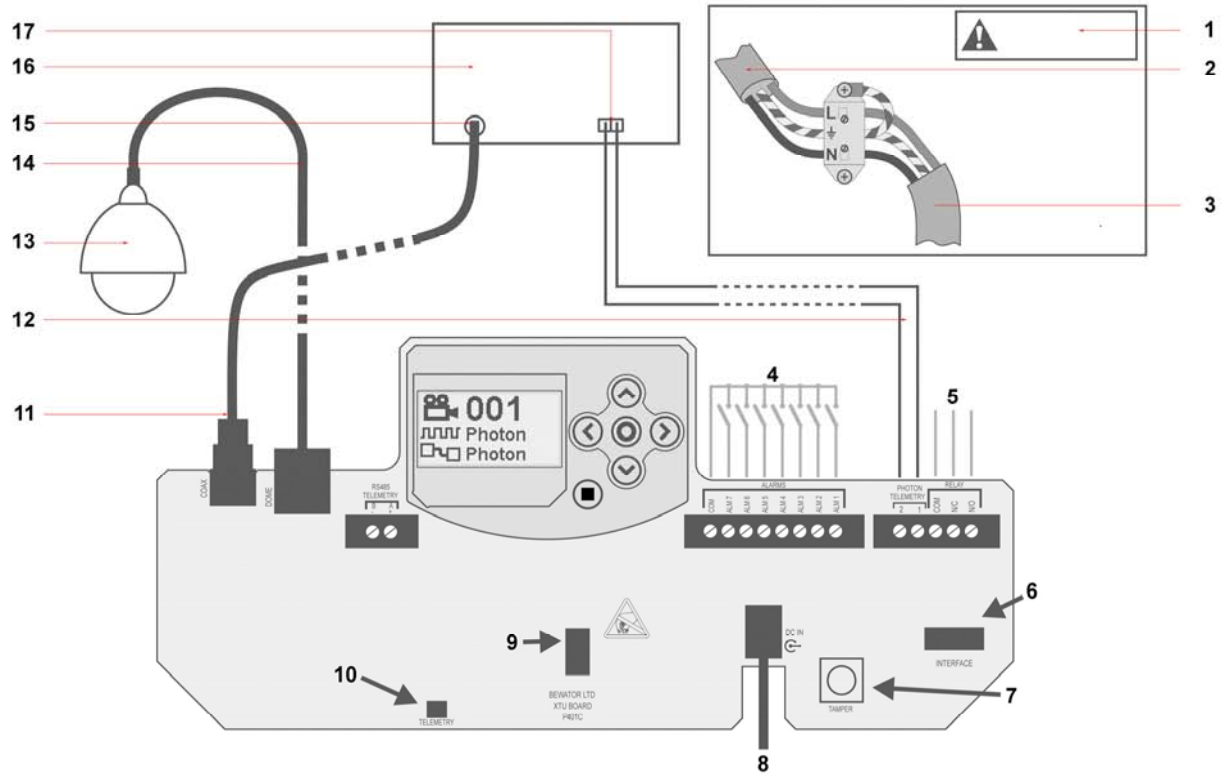


Fig. 15 Photon telemetry

1	**CAUTION** This device must be earthed. A readily accessible disconnect device shall be incorporated in the building installation wiring. As part of the building installation protect this device via a 3 A fuse or 3 A circuit breaker.
2	AC mains input
3	AC mains to PSU
4	Alarm contacts
5	Relay output to user equipment (e.g. alarm system) 1.5 A, 24 V DC max.
6	Interface connector (do not use)
7	Tamper switch
8	From PSU
9	Programming head (do not use)
10	Telemetry indicator
11	Coax cable (video to controller)
12	2-core telemetry cable
13	Dome unit
14	Dome connection cable
15	Photon telemetry controller
16	Camera input
17	Telemetry output

9.5 Wiring guide

If you have chosen to use a longer cable than the one supplied with the XTU, ensure that the following pin-outs and colour coding are maintained. Failure to do so may result in the malfunction of the Solaris™ Dome. See Section 8.5: Cat5 cable assembly and disassembly.

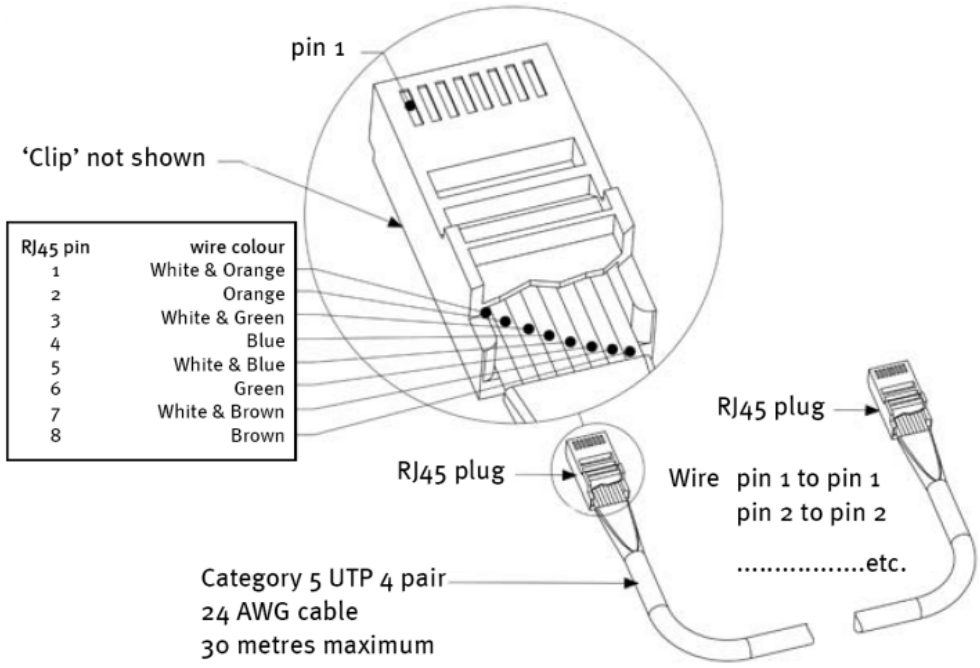


Fig. 16 Wiring of the XTU

XTURJ45 pins	Wire colour	Pin function	Dome unit RJ45 pins
1	White and orange	RS485 + A	1
2	Orange	RS485 - B	2
3	White and green	Differential video	3
4	Blue	DC + (18 V)	4
5	White and blue	DC + (18 V)	5
6	Green	Differential video +	6
7	White and brown	DC 0 V	7
8	Brown	DC 0 V	8

RJ45 plug part reference guide

For solid core cable (e.g. Belden 11700A), use AMP5-569278-4 or equivalent. Ensure that a suitable crimping tool is used (e.g. Telemaster 30-496).

10 Configuration of the External Termination Unit

Once the physical installation of the XTU is complete it needs to be configured to use the correct telemetry protocol and receiver address to identify itself correctly. To allow this to be carried out, the XTU is fitted with a LCD display and a simple keyboard.

By default, the display indicates the receiver address, the current protocol and the interface that is in use. However, the keypad can be used to control a menu system that provides access to a number of settings.

Fig. 17 XTU keyboard

10.1 Keys and their functions

Keys	Functions
	Used to enter a menu or select an option.
	Scrolls through the available options.
	Navigates between options. **NOTE** The left key allows you to go back up a level in the menus.
	Switches the display into 'live video' mode for test purposes.
	NOTE Camera control is not possible when in LCD 'live video' mode.

Press the button when in 'live video' mode to enter pan and tilt mode, where the Dome can be controlled via the XTU. Pressing it again allows zoom and focus, pressing a 3rd time switches back to 'live video' mode.

Pressing the button will exit this mode; alternatively this mode will exit after 2 minutes of inactivity.

NOTE
Whilst in this mode, pressing the Up or Down keys will alter the brightness of the LCD display.

10.2 LCD orientation

Depending on how the XTU was mounted, you may need to change the orientation of the display.

While the status screen is shown, press the up or down arrow on the keypad for 3 seconds.

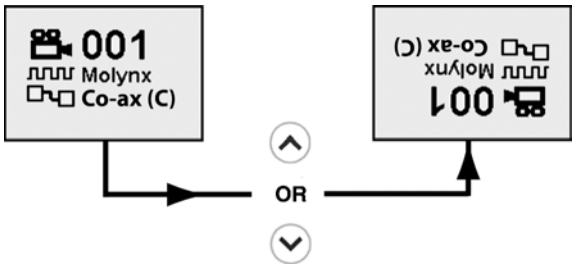


Fig. 18 Orientation of the LCD

10.3 The XTU main menu

The XTU main menu provides access to the configuration settings in the XTU unit.

Protocol	Selects a telemetry protocol from the list.
Interface	Selects a telemetry interface from the list. Note that the Auto search option is only available when a Molynx protocol has been selected. **NOTE** The options available depend upon the protocol selected. An option that is 'striked-through' will not be selectable.
Receiver address	Each unit on the system must have a unique address, selectable between 1 and 512.
Advanced comms	Allows individual comms parameters (baud rate, data bits, parity, data direction) to be altered from the default for the current protocol. If non-default settings are being used the protocol name on the status screen is suffixed with '*'. Selecting a protocol will set all the comms settings to the default for that protocol. The default for each setting is indicated by an arrow.
Special presets	To allow access to the on-screen display when using a 3rd party controller, a preset may be assigned. Recalling this preset will enter OSD mode. In addition, a second preset may be assigned which if recalled twice within 2 seconds will enter the OSD mode.
LCD contrast	Adjust the LCD display contrast to make it more readable in difficult lighting situations.
Video gain > XTU video gain	If very long coax cable runs are used, video degradation is possible, and particularly noticeable as loss of sharp edges. To combat this Solaris™ has internal video amplifiers, which control the video signal amplitude of both brightness (low frequency amplification) and sharpness (high frequency lift). The high frequencies are emphasised by the sharpness control, as they relate particularly to sharp edges which suffer the worst attenuation on long cable runs. The brightness control will compensate for different coax types as they have different low frequency characteristics.
Video gain > RTU video gain	When a RTU (Remote Termination Unit) is in use this setting allows additional gain to be set to compensate for Cat5 cable lengths in excess of 150 m.
Dome functions	Allows Pan/Tilt/Zoom and Focus control of the Dome camera and access to the OSD set-up menus.
Temperature	Displays the XTU's current on-board temperature.
Backup/restore	All Dome settings such as camera setup, presets, tours, patterns, privacy zones and text can be backed up to the XTU and restored at a later date if the Dome is switched with another or replaced.
Line break action > TTY mode	When checked (on) a line break on the telemetry port will force the XTU into TTY mode. [Down key] = checked (on) [Up key] = unchecked (off)
Software info	Displays the software's version details.
Factory reset	Resets the XTU configuration back to the factory default settings.
Test mode	Opens the test menu.

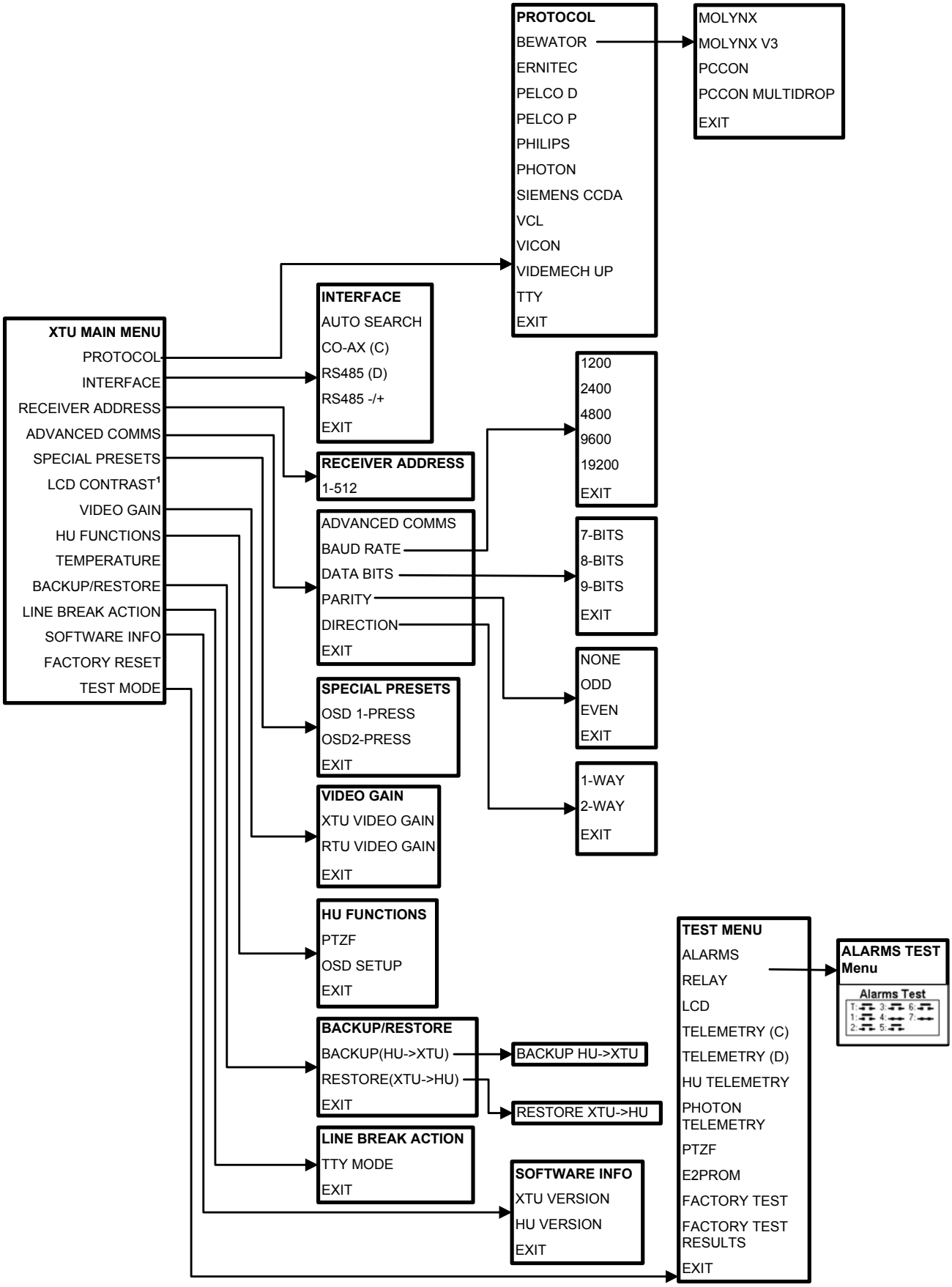


Fig. 19 The XTU main menu

10.4 XTU setup

Using the main XTU menu you can configure the XTU to the correct settings for your control equipment:

1. Select the correct telemetry protocol. See Section 12: Telemetry controller operation and setup.
   MAIN XTU MENU >> PROTOCOL
2. Select the control interface type.
   MAIN XTU MENU >> INTERFACE
3. Select the receiver address (camera number).
   MAIN XTU MENU >> RECEIVER ADR
4. Press the button to view if the video signal is present.
5. Press the button to exit ‘live video’ mode.

11 Configuration of the Dome unit

Most of the Solaris™ Dome's advanced functions are configured using a menu system that is presented by the camera's on-screen display (OSD). This section of the manual covers the use of the OSD menu system, and explains the options it provides.

When the Dome is new or after a factory reset has been performed, a default tour is already stored comprising of sixteen preset positions (1 to 16). These preset positions can be overwritten by storing new positions or by selecting 'Clear Presets' from the Reset menu.

11.1 On-screen display menus

The menus system presented by the OSD is controlled by using keys on the system telemetry controller. Since the Solaris™ Dome can be controlled by a wide range of telemetry controllers, the position and labelling of the specific keys used may vary from system to system. Refer to Section 12: Telemetry controller operation and setup for specific information.

Menu flowcharts overview

The OSD's main menu contains 8 items, all of which lead to a sub-menu system of commands when selected. Details of each of these sub-menus and the commands they contain are presented as flowcharts on the following pages.

CAMERA	This menu provides access to several of the camera's advanced functions. See Section 11.1.2: The Camera menu for details.
PRESETS TOURS PATTERNS	This menu is used to set up stationary preset positions, pre-programmed tours of specific presets, and to record any of the four patterns - a series of manual movements that can be recorded and then replayed as an alternative to a tour. It is also used to assign actions to presets; such as recalling tours and to assign presets to alarms. See Section 11.1.3: The Presets, Tours and Patterns menu for details
PRIVACY ZONES	This section of the menu system will allow you to set up Privacy Zones. These are pre-defined sections of the cameras field of view that are blanked to provide privacy for occupants of the areas covered. See Section 11.1.4: The Privacy Zones menu for details
SOFT LIMITS AND SECTORS	Soft Limits will allow you to set up and remove software limits that restrict the vertical travel of the camera. Sectors will allow individual identification, by name, of the 16 sectors available within the Solaris™ Dome's horizontal movement.

ALARMS	The Solaris™ Dome's XTU is provided with a tamper alarm and seven general-purpose alarm inputs. This menu is used to set up these alarm inputs and control the Solaris™ Dome's response when they are triggered. See Section 11.1.6: The Alarm menu for details.
OSD	This menu will allow you to set up how the OSD will appear to the Solaris™ Dome camera's operator during normal operation. It will allow you to set a unique name for the camera and then control the information that will appear on the screen when the camera is viewed. See Section 11.1.7: The OSD menu for details.
DIAGNOSTICS	This menu provides diagnostic information about the Solaris™ Dome's operation. See Section 11.1.8: The Diagnostics menu for details.
PASSCODES	This menu will allow you to set up the Operator and Installer level pass codes for the Solaris™ Dome. See the following section for details.

11.1.1 The Passcodes menu

In addition to the telemetry controller pass code or physical key lock you may need to enter to access the OSD menus, it is possible to set two additional levels of access pass code for the Solaris™ Dome itself.

These are known as the Operator code and the Installer code, and they provide different levels of access to the menu items. The Installer code is required to access the more technical aspects of the configuration.

If these codes have not been set (i.e. left at 0000), no action is required to enter the menus. If they have been set, you will be prompted to enter an appropriate code to access the menus that they protect.

Use the Passcodes menu to set up new pass codes, or edit existing ones. Failure to enter a pass code correctly within three attempts will result in a lock out period of twenty minutes.

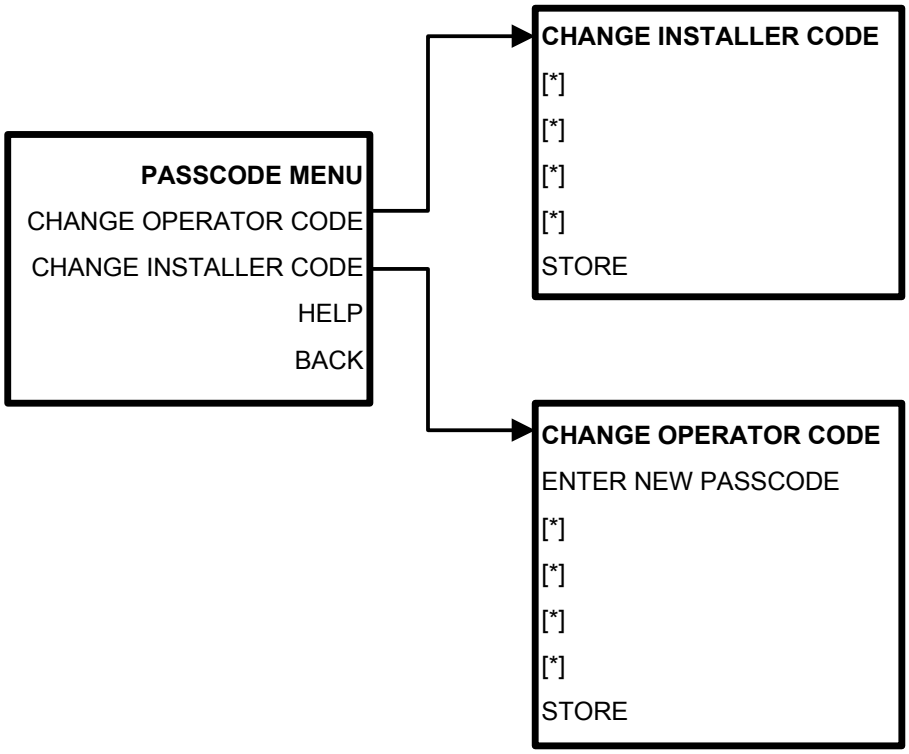


Fig. 20 The PASSCODES menu

11.1.2 The Camera menu

The camera menu provides control of a number of advanced features of the camera, and access to settings that affect the camera's response to unusual lighting conditions.

White Balance	The White Balance menu item controls how the camera adjusts its colour output under different types of light source. You can choose between two pre-set configurations (indoor, outdoor), automatic mode, auto tracing mode, one push mode that can be automatically re-adjusted only at the request of the user and manual mode where red and blue gain can be adjusted separately by the user. **NOTE** When in One Push mode, use Iris Open to perform a one push.
Backlight	This setting provides backlight compensation for situations where the background is more brightly lit than the subject
Exposure	The EXP Priority setting determines which aspect of control has priority for the camera's automatic exposure setting. Choosing a mode other than auto will allow you adjust the operation of that mode. The Slow Shutter setting controls whether slow shutter operation will switch in automatically before the Night time mode is activated. **NOTE** Automatic Slow Shutter is only available when the exposure priority is set to Full Auto.

Special menu

Digital zoom	When digital zoom is tuned ON and the maximum optical zoom range is reached, digital zoom enlarges the centre of the subject by expanding the image in both the horizontal and vertical directions.
Day/Night mode	The IR-cut filter can be set to engage and disengage automatically as light levels change, or manually when the Lamps key is pressed.
Auto Flip	The Auto Flip function allows continuous tracking of a target moving under the Dome without the need for the operator to release the joystick.
Video gain	If very long coax cable runs are used, video degradation is possible, and particularly noticeable as loss of sharp edges. See **Video gain > XTU video gain** in Section 10.3: The XTU main menu for details.
RTU gain	When an RTU (Remote Termination Unit) is in use this setting allows additional gain to be set to compensate for Cat5 cable lengths in excess of 150 m.
Reset menu	This is also accessible from within the Special menu: **CAMERA MODULE RESET** – Will reset all camera settings **CLEAR PRESETS** – Clears all preset positions and text. **CAMERA RESET** – Will re-calibrate the pan & tilt functions. **FULL FACTORY RESET** – Will reset the Dome to factory settings. **LENS INITIALISE** – Allows automatic recalibration of the lens.
Backup Dome unit	All the Dome settings such as camera setup, presets, tours, patterns, privacy zones and text can be backed up to the XTU and restored at a later date if the Dome is switched with another or replaced.

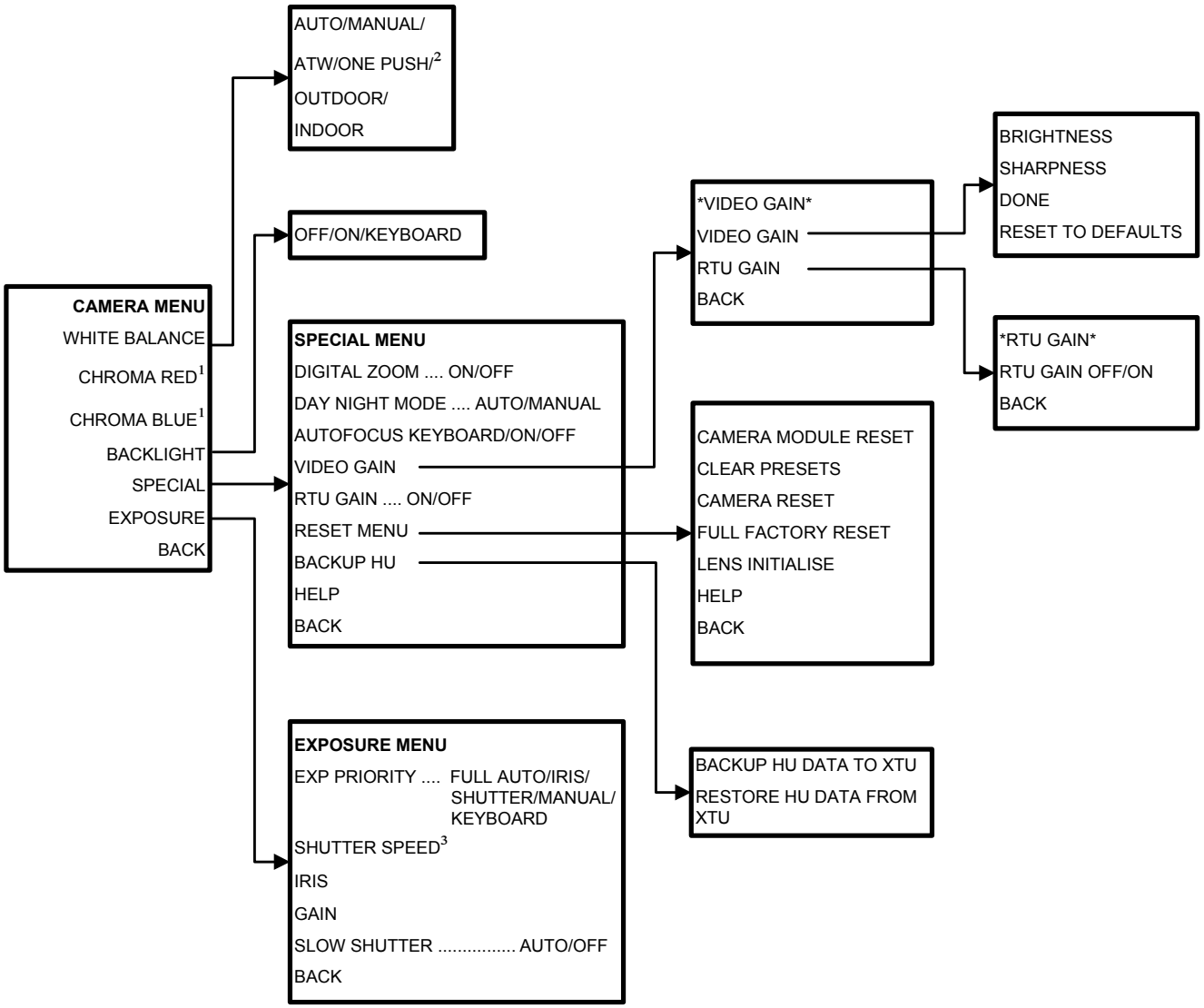


Fig. 21 The Camera menu

[1]) Use “Chroma Red” and “Chroma Blue” to manually adjust the camera’s white balance. These settings are only available when the WB “Manual” setting is selected. Follow the onscreen instructions to adjust them.

[2]) ATW = Auto Tracing White balance
use this setting when the type of light source is constantly varying.

[3]) The Shutter Speed, Iris and Gain settings are only available, when certain EXP Priority settings are selected. When KEYBOARD is selected, Iris can be manually controlled using the Iris keys on the VK3-keyboard. Turning ON Auto Iris on the keyboard will switch to automatic mode.

11.1.3 The Presets, Tours and Patterns menu

A **Preset** is a stored, fixed camera position that you can return to by entering a preset number on the controller keyboard. The Solaris™ Dome can store up to 99 presets.

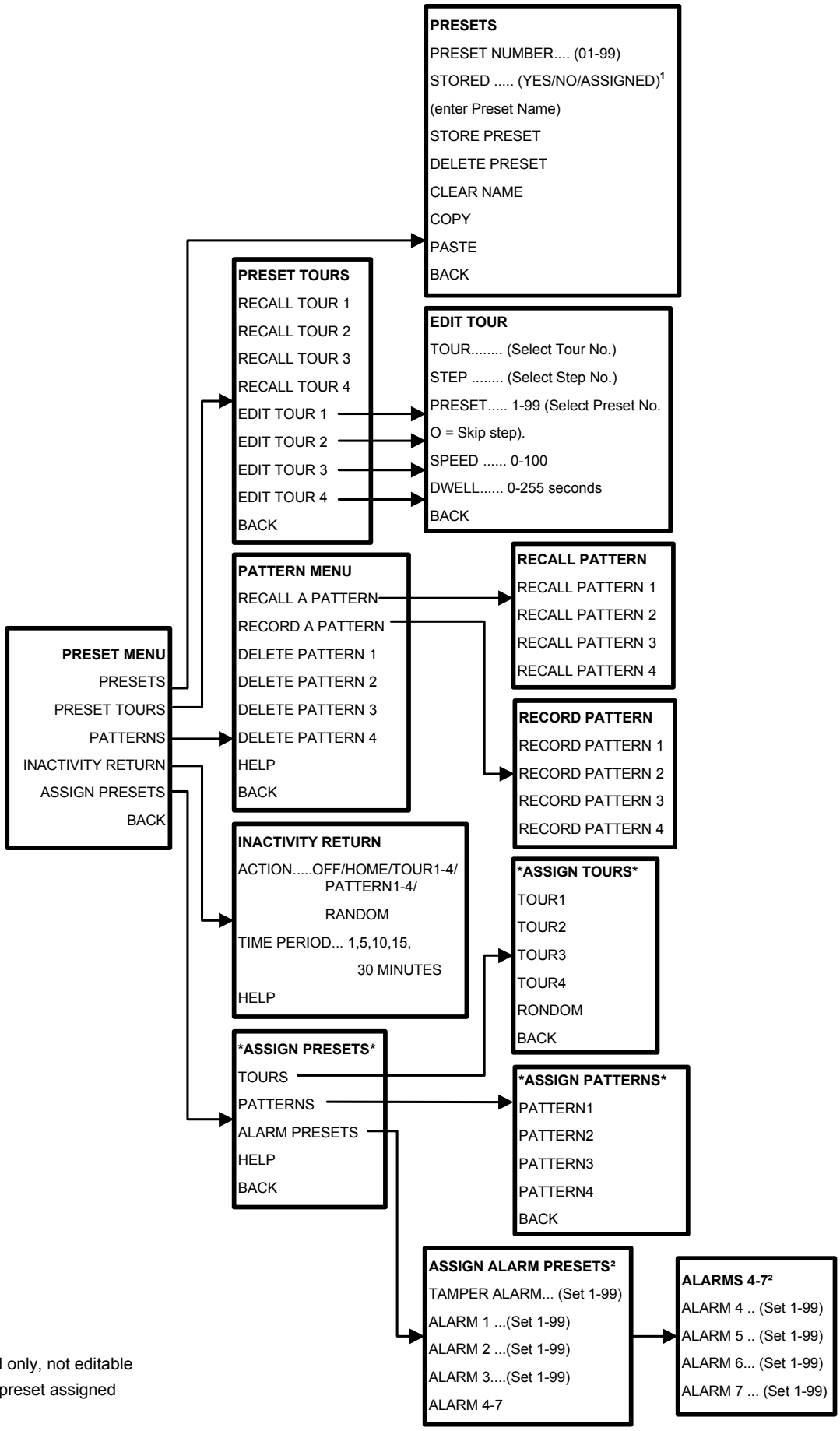
A **Preset Tour** is a pre-configured sequence of presets that the Solaris™ Dome will move between continuously. The Solaris™ Dome can store up to 4 tours of 32 steps each. Each step can have an associated speed and dwell time.

A **Pattern** is a recorded sequence of Solaris™ Dome movements that can be played back repeatedly. The Solaris™ Dome can store four patterns, the length of which can be up to several minutes.

Presets	Use this item to review, edit, name and store presets. You can also store preset text, it will remain on the OSD until you move to another pan, tilt or zoom location.
Preset Tours	This menu item is used to recall and edit preset tours.
Patterns	Use this menu to recall a previously recorded pattern or record a new one.
Inactivity Return	This menu allows you to select an operation that will start after a predefined period of keyboard inactivity.
Assign Presets	This menu will allow you to assign any of the four tours or the pattern to a preset. This means that they can be started by recalling the preset. Within the assign preset menu, it is also possible to assign presets to alarms that can be recalled when an alarm is triggered. Two sub-menus will allow you to assign a preset to any of the 8 alarms

NOTE

A random tour is a tour that consists of the steps used in tour 1, but are replayed in a random order. This helps prevent potential criminals from studying and learning the movement of a traditional tour.



1) Setting is read only, not editable

2) 'O' means no preset assigned to Alarm.

Fig. 22 The PRESETS, TOURS and PATTERNS menu

11.1.4 The Privacy Zones menu

Privacy zones are areas of the camera's field of view that are blanked so that the operator cannot see into them. The Solaris™ Dome can be configured with up to 24 privacy zones and up to 8 of these can be on screen at any time.

Use the Privacy Zones menu to review existing privacy zones and define new ones.

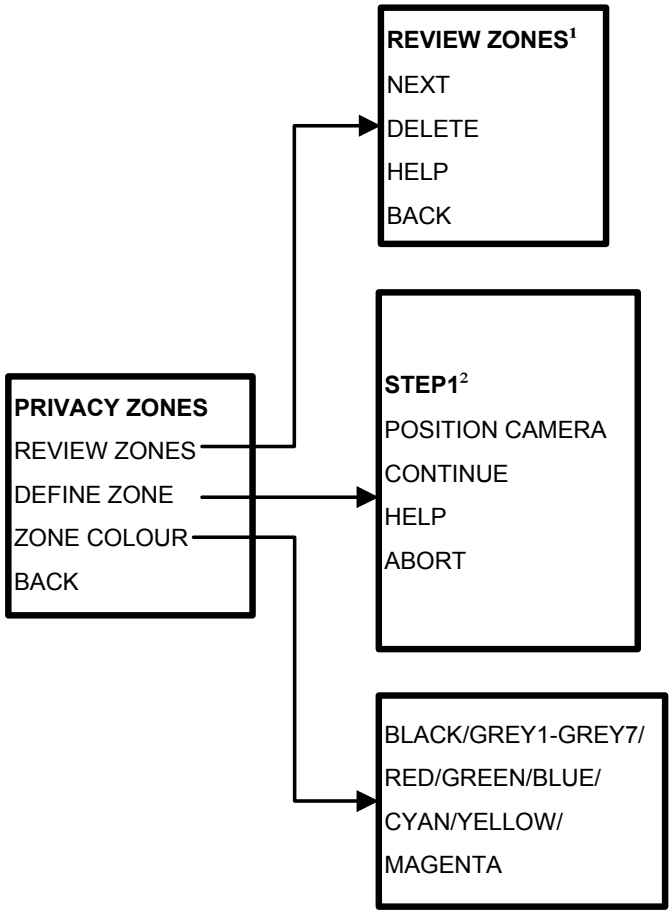


Fig. 23 The PRIVACY ZONES menu

[1]) Select ***Next*** to view the next stored zone. Select ***Delete*** to remove a zone.

[2]) Follow the on-screen instructions to define up to 24 privacy zones.

11.1.5 The Soft Limits and Sectors menu

Soft limits

The Soft Limits menu will allow you to set up and remove programmable soft limits to the vertical travel of the camera.

Once the upper and lower limits are set, the camera will not view the areas above or below those limits.

Sectors

The Solaris™ Dome's horizontal movement is divided into 16 sectors that can be individually identified with a name. The Sectors item will allow you to configure the names of the sectors.

When the sector function is activated (in the OSD menu, see Section 11.1.7), the sector name is displayed on screen whenever the camera is looking into that sector. The purpose of this is to provide the operator with help in orientation. The Edit Sector menu allows you to edit the sector name.

For example: North >> East >> South >> West

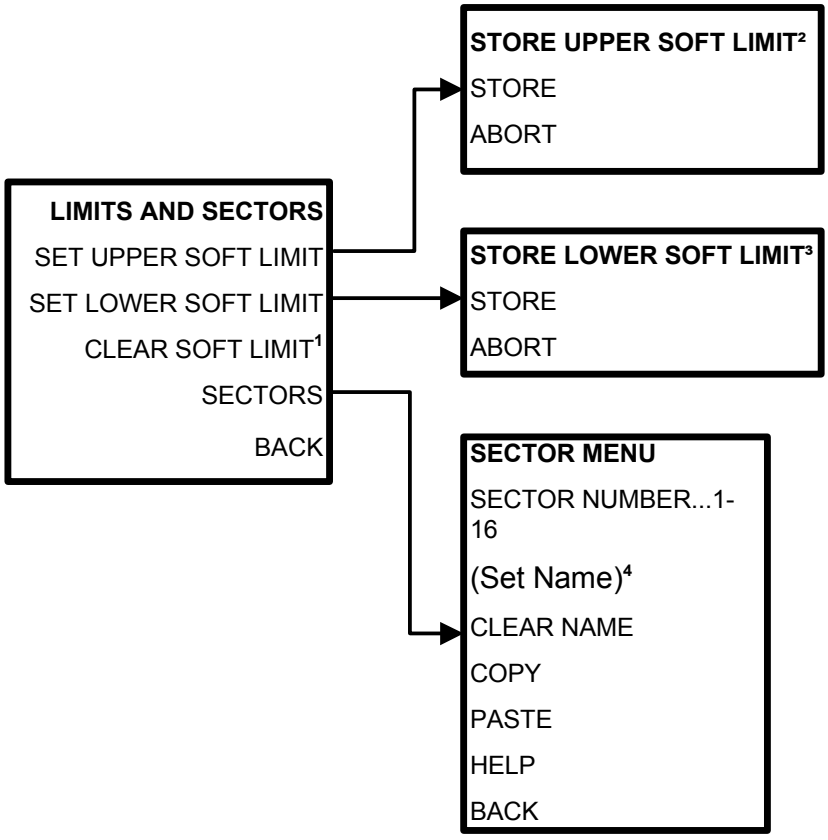


Fig. 24 The SOFT LIMITS AND SECTORS menu

[1]) Press 'Set' to delete the current soft limit settings.

[2]) Use the joystick to tilt to the desired position. Select store to save the limit or abort to exit without saving.

[3]) Use the joystick to tilt to the desired position. Select store to save the limit or abort to exit without saving.

[4]) Each sector can have up to 24 characters of text assigned to it. If blank, the whole line is highlighted, press 'Set' to add characters.

11.1.6 The Alarm menu

The Alarm menu provides access to settings relating to the alarm contacts in the XTU unit. Each of the 8 alarms can be configured individually to respond in a different way.

Contact	Selects whether the alarm contacts are normally open(N/O) or normally closed (N/C).
Video blanking	Video blanking provides a way of signalling an alarm for systems that do not support remote reporting. When set to Yes, an alarm will blank the video for 3 seconds. For example: A V2 system with video loss alarms fitted.
Relay	Selecting Momentary will cause the relay output to operate for 3 seconds when an alarm occurs. Select Latched for the relay to operate for the full duration of the alarm.
Alarm text	Each alarm can be identified with 24 characters of text that will appear when an alarm occurs, remaining on-screen until the alarm is acknowledged by a user manually controlling the Dome

Global settings

Local report	Enables a local response of the alarm. The Dome moves to the assigned preset position and displays the user entered text (see Assign alarm presets in Section 11.1.3: The Presets, Tours and Patterns menu).
Remote report	Enables remote reporting of the alarm (for systems with bi-directional telemetry - the alarm state is signalled to the controller).
Alarm resume	This setting, in conjunction with Time Period, determines what action the Solaris™ Dome will perform after an alarm has occurred. When Alarm Resume is set to Home the camera will return to home position (preset 1). Alternatively, you can select any of the four tours or four patterns (assuming these have been programmed – see Section 11.1.3: The Presets, Tours and Patterns menu).
Time period	Sets a delay period before performing the action specified in 'Alarm resume'

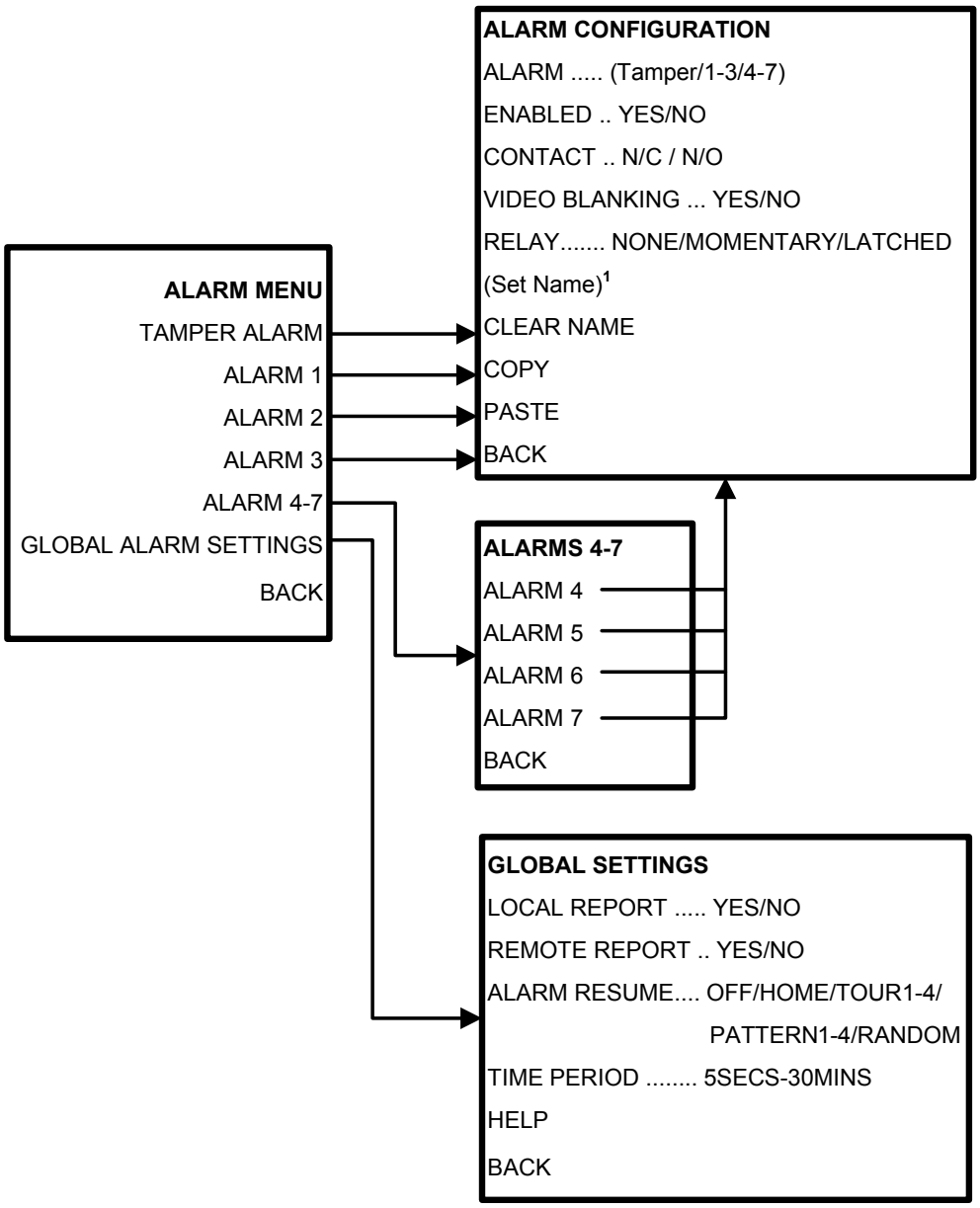


Fig. 25 The ALARM menu

[1]) Each alarm can have up to 24 characters of text assigned to it. If blank, the whole line is highlighted, press "Set" to add characters.

11.1.7 The OSD menu

The OSD menu is used to set up what information is displayed on screen during routine operation. The display is dynamic, and items such as alarms are only displayed when they are relevant. New items will overwrite existing items at the same location in the following order of priority:

1. Receiver address
2. Alarm name
3. Information message
4. Preset number
5. Preset name
6. Sector name
7. Camera number
8. Camera name
9. Status

Camera details	This allows you to set up a name and number for the camera (note that the camera number is just an identifier for the camera and not the receiver address).
OSD configuration	This allows you to choose which items to display, and where to locate them on-screen. The screen is divided into left and right and 12 lines vertically (1 = top; 12 = bottom).

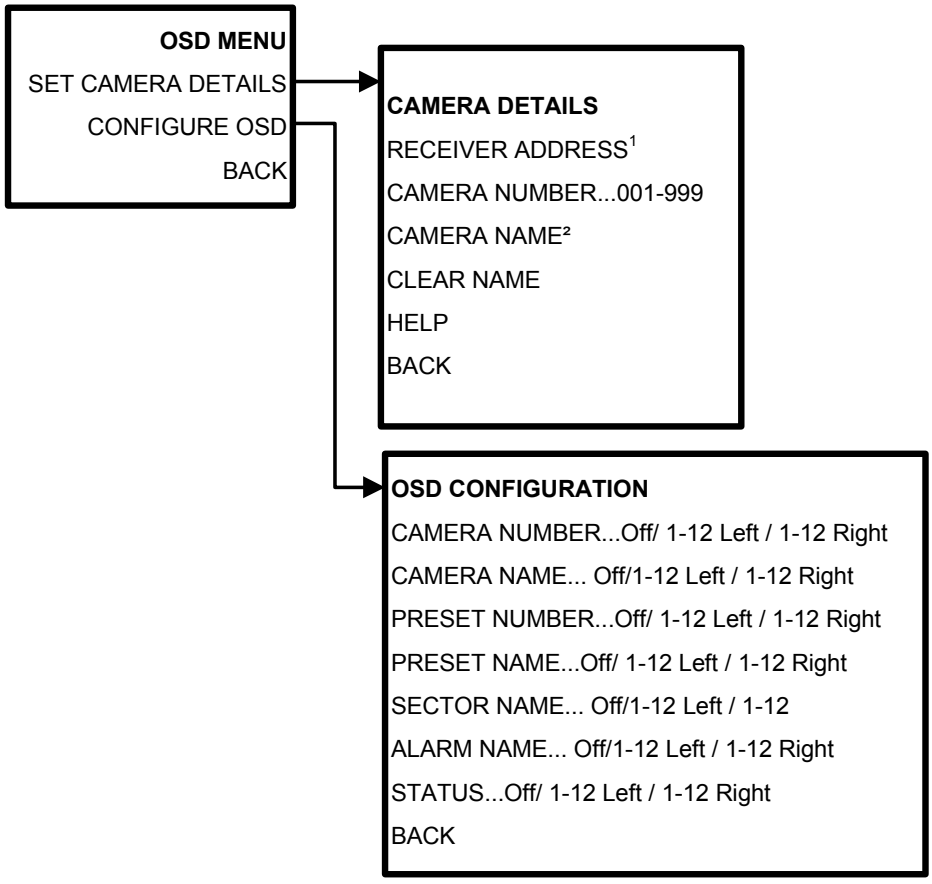


Fig. 26 The OSD menu

[1]) Setting is read only, not editable.
[2]) "CAMERA NAME" can have up to 24 characters of text assigned to it. If blank, the whole line is highlighted, press 'Set' to add characters)

11.1.8 The Diagnostics menu

This menu is intended for use by technicians and provides access to various diagnostic parameters within the Solaris™ Dome.

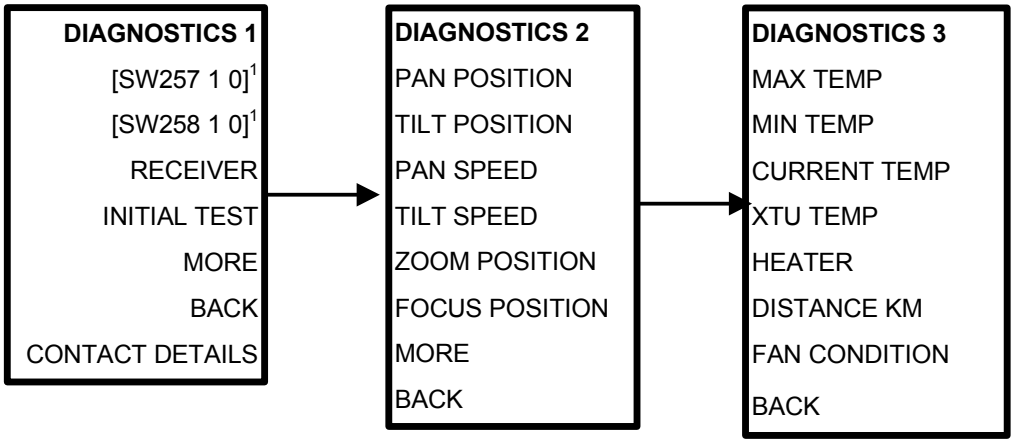


Fig. 27 The DIAGNOSTICS menu

[1]) Setting is read only, not editable.

12 Telemetry controller operation and setup

This chapter explains how to operate the Solaris™ Dome using a telemetry controller and describes:

- Accessing the OSD (Siemens, Molynx 6000, V3i and 3rd party)
- Protocol tables

12.1 Telemetry keyboard operation

A great deal of the configuration and set up of the Solaris™ Dome must be carried out using the on-screen menu system that is described in Section 11: Configuration of the Dome unit.

12.1.1 Access to the OSD with Siemens controllers

CKA4820/CKA3210 series controllers

Ensure that the telemetry control port of the CKA keyboard (Com-Port 2) is set to “CCDA-protocol”. Use the following keys to navigate the Dome OSD menu:

Key	Function
65 Pos or ***Cam + F1***	Menu On
66 Pos or ***Cam + F10***	Menu Off
Tilt Up	Up
Tilt Down	Down
Pan Left	Left
Pan Right	Right
Focus Far	Select parameter / submenu
Focus Near	Deselect parameter / exit submenu
1 Pos	Toggle between OSD and PTZ navigation (function only available when opening OSD via “65 Pos”)

NOTE

When opening the OSD with ***Cam + F1*** it is necessary to exit the OSD with ***Cam + F10***. It is possible to exit the OSD menu by selecting the EXIT option in the OSD main menu. If so, the keyboard will remain in menu mode (green LED flashing). It is necessary to use ***Cam + F10*** to exit menu mode on the keyboard in that case. Also Solaris™ will automatically exit the OSD mode after approx. 2 minutes of no activity. In this case it is as well necessary to use ***Cam + F10*** to exit menu mode on the keyboard. When opening OSD with ***Cam + F1***, toggling between OSD navigation and PTZ navigation is not possible.

SIMATRIX NEO and SIMATRIX SYS/648/164 via dome converter CAC0103

Key	Function
65 Pos or button OSD	Menu On
66 Pos	Menu Off
Tilt Up or button UP	Up
Tilt Down or button DOWN	Down
Pan Left	Left
Pan Right	Right
Focus Far or button SET	Select parameter / submenu
Focus Near	Deselect parameter / exit submenu
1 Pos	Toggle between OSD and PTZ navigation

12.1.2 Access to the OSD with Bewator controllers

To gain access to the OSD you will need to enter the telemetry controller's programming mode.

Bewator 6000 series controller

OSD access on the 6000 series requires the entry of a PIN number, and is therefore restricted to authorised persons only:

1. Enter the 6 digit PIN number.
2. Select "Setup camera" from the menu.
3. Select the item by pressing the "Play" key.
4. Use the following keys to navigate the menus:

Key	Function
	Menu On/Off
	Up
	Down
	Enter
	Left
	Right

Bewator v3i controller

1. Turn the key to enter programming mode.
2. Press to move to the 2nd page.
3. Select ‘Camera Setup’.
4. Select the relevant v3i option to navigate the menus.

12.1.3 Access to the OSD with 3rd party controllers

1. Press 95 Preset Recall.
   OR
   Preset 2 Recall, Preset 2 Recall (within 2 seconds of each other).

NOTE
Both special presets for accessing the menu can be changed or disabled using the XTU. See Section 10.3: The XTU main menu for details.

2. Navigate the menus using the joystick.
3. To select use Preset 3 Recall.

NOTE
Use Preset 1 to toggle between Pan / Tilt (camera operation) and OSD menu navigation.

12.2 Advanced camera functions

The 6000 series and v3i controllers also provide direct access to advanced camera functions:

Lens slow

This function slows down the operation of the lens's Zoom and Focus functions to make it easier to control when fine adjustments are necessary. The function toggles on and off.

Lamps

If set to Manual in the camera special menu, this function toggles between the camera's day and night setting.

Autofocus

The Autofocus function can be toggled on and off. The manual focus keys can still be used when autofocus is latched on, but the Solaris™ Dome will start to autofocus again after a pan, tilt or zoom operation.

Auto Iris

When the EXP priority is set to Keyboard, the Iris can be manually controlled using the Iris Open and Iris Close keys on the keyboard, or switched to Automatic Iris by pressing the Auto Iris key.

Function	6000 series	v3i
Lens Slow		
Lamps		Enter the camera function control and select the relevant v3i option to navigate the menus.
Autofocus		
Auto Iris		

12.3 Use with Siemens controllers

The Siemens CCDA protocol is implemented and may be selected from the protocol menu. Controlling the dome using the CCDA protocol can be performed by direct connected keyboard CKA48xx/CKA32xx, SIMATRIX Neo (Port 1) and SIMATRIX SYS / 648 / 164 by using the dome converter CAC0103, Release V1.7 (Aug. 06).

12.3.1 Direct control via CKA48xx/CKA32xx

NOTE

We recommend following interfacing:

- RS485 connection, 9600 baud, even parity, 8 data bits, 1 stop bit
- Camera addressing is 0-127

Tested using Siemens keyboard CKA4820

Operation	User keyboard action	Notes
Pan Left (variable speed)	Pan Left	
Pan Right (variable speed)	Pan Right	
Tilt Up (variable speed)	Tilt Up	
Tilt Down (variable speed)	Tilt Down	
Focus Near	Focus Near	
Focus Far	Focus Far	
Zoom In	Zoom In	
Zoom Out	Zoom Out	
All Stop	Cam + Stop	
OSD Setup On	Cam + F1	Also available by Pos 65. When opening the OSD with “Cam” + F1 it is necessary to exit the OSD with “Cam” + F10. It is possible to exit the OSD menu by selecting the EXIT option in the OSD main menu. If so, the keyboard will remain in menu mode (green LED flashing). It is necessary to use “Cam” + F10 to exit menu mode on the keyboard in that case. Also Solaris™ will automatically exit the OSD mode after approx. 2 minutes of no activitiy. In this case it is necessary to use “Cam” + F10 to exit menu mode on keyboard.
AutoFocus On	Cam + F2	
Flip	Cam + F3	
Toggle Colour / B&W	Cam + F4	This function will toggle the automatic D/N function if preset.
Pattern Record	Cam + F6	Enters pattern record mode for pattern 1 (direct).
Pattern Stop	Cam + F7	Ends pattern record mode for pattern 1 (direct).
Pattern Save	Cam + F8	Ends pattern record mode pattern 1 and saves (direct).
Pattern Test	Cam + F9	Recalls the last pattern recorded (direct).
Exit OSD menu	Cam + F10	
Store Preset 1-64	[1…64] Mem	
Recall Preset 1-64	[1…64] Pos	
Enter OSD menu	65 Pos	Also available using Cam+F1.
Exit OSD	66 Pos	Also available using Cam+F10.
Go to Home position	67 Pos	Home is Preset 1 on Solaris™.
Flip	68 Pos	
Start Auto Patrol	69 Pos	Starts preset tour.
BLC On	70 Pos	
BLC Off	71 Pos	
One Push White Balance	72 Pos	
One Push AutoFocus	73 Pos	
Display Version	74 Pos	Displays Dome and XTU firmware versions.
Setup privacy zone	76 Mem	
IR Cut Filter On ("Night Mode")	77 Pos	
IR Cut Filter Off ("Day Mode")	78 Pos	
Stop Scan	83 Pos	Stops current sequence / tour / pattern.
Random Scan	84 Pos	Starts random preset tour.
Frame Scan	85 Pos	Starts preset sequence (fixed speed, uniform dwell time).
Auto Scan	86 Pos	Starts preset tour.
Record / Recall Pattern 1	87 Mem / Pos	Starts recording or playing Pattern 1.

Record / Recall Pattern 2	88 Mem / Pos	Starts recording or playing Pattern 2.
Record / Recall Pattern 3	89 Mem / Pos	Starts recording or playing Pattern 3.
Record / Recall Pattern 4	90 Mem / Pos	Starts recording or playing Pattern 4.
Stop Pattern Record	91 Pos	Stops recording current pattern.

12.3.2 Control via SIMATRIX NEO and dome converter CAC0103

The Siemens Solaris™ Dome can be controlled via the SIMATRIX video matrices. SIMATRIX NEO provides direct physical connection via telemetry port 1. For connection with SIMATRIX SYS / 648 / 164 an additional dome converter CAC0103, Release V1.7 (Aug. 06) is required to interface the RS485 port of the dome to the TTY port of the video matrix and to perform the necessary code translation.

NOTE

We recommend following interfacing:

- RS485 connection, 9600 baud, even parity, 8 data bits, 1 stop bit,
- camera addressing is 0-254.

Tested using Siemens keyboard CKA4820 and SIMATRIX NEO , CAC0103

Operation	User keyboard action	Notes
Pan Left (var. speed)	Pan Left	
Pan Right (var. speed)	Pan Right	
Tilt Up (var. speed)	Tilt Up	
Tilt Down (var. speed)	Tilt Down	
Focus Near	Focus Near	
Focus Far	Focus Far	
Zoom In	Zoom In	
Zoom Out	Zoom Out	
Store Preset 1-64	[1…64] Mem	
Recall Preset 1-64	[1…64] Pos	
Enter OSD menu	65 Pos	
Exit OSD	66 Pos	
Go to Home Position	67 Pos	Home position is Preset 1 on Solaris™.
Flip	68 Pos	
Start Auto Patrol	69 Pos	Start Preset Tour.
BLC On	70 Pos	
BLC Off	71 Pos	
One Push White Balance	72 Pos	
One Push AutoFocus	73 Pos	
Display Version	74 Pos	Displays Dome and XTU firmware versions.
Setup privacy zone	76 Mem	
IR CutFilter On ("Night Mode")	77 Pos	
IR Cut Filter Off ("Day Mode")	78 Pos	
Stop Scan	83 Pos	Stops current sequence / tour / pattern.
Random Scan	84 Pos	Starts random preset tour.
Frame Scan	85 Pos	Starts preset sequence (fixed speed, uniform dwell time).
Auto Scan	86 Pos	Starts preset tour.
Record / Recall Pattern 1	87 Mem / Pos	Starts recording or playing Pattern 1.
Record / Recall Pattern 2	88 Mem / Pos	Starts recording or playing Pattern 2.
Record / Recall Pattern 3	89 Mem / Pos	Starts recording or playing Pattern 3.
Record / Recall Pattern 4	90 Mem / Pos	Starts recording or playing Pattern 4.
Stop Pattern Record	91 Pos	Stops recording current pattern.

12.4 Use with Bewator controllers

The following Bewator (Molynx) protocols are implemented and may be selected from the PROTOCOL menu:

- Molynx
- Molynx V3
- PCCON
- PCCON 1-Way

12.4.1 Molynx & Molynx V3

NOTE

We recommend following interfacing:

- RS485 connection; 9600 baud, even parity, 8 data bits, 1 stop bit.
- Camera addressing is 0-511 for cameras 1-512. Also responds to broadcast addresses.

Tested using Bewator 600-Series, 6000-Series, Visilynx 2, Visilynx 2+, Visilynx V3i.

Operation	User action	Notes
Pan / Tilt / Zoom / Focus	Joystick for pan/tilt;[ZOOM IN] / [ZOOM OUT] for zoom; [FOCUS NEAR] / [FOCUS FAR] for focus	When in OSD cursor mode Pan / Tilt operate as cursor right / left / up / down (but see also Recall Preset 1 below).NB: on a Visilynx 2 when in the CAMERA SETUP menu on the keyboard it is not possible to control the camera's pan/tilt; it is necessary to exit this keyboard menu to do so.
Iris	[IRIS OPEN] / [IRIS CLOSE]	Only operates when exposure priority is set to KEYBOARD.
AutoIris	[AUTOIRIS]	Overrides manual iris operation
AutoFocus Off / On	[AUTOFOCUS]	Toggle action. Not available on 600-Series keyboard.
Day Mode / Night Mode	[LAMPS]	Toggle action. Switches camera between day and night modes (colour/mono version only).
One-Touch White Balance	[IRIS OPEN]	If one-touch white balance is enabled in OSD and exposure priority is not set to KEYBOARD.
Recall Preset	[n] [PRESET RECALL]	Range 1-99. Preset 95* or Preset 2* twice within 2 seconds functions as the OSD Mode 'MENU' command. When in OSD mode Preset 1 switches the joystick between cursor and camera control. When in OSD cursor mode Preset 3 functions as SET.
Store Preset	[n] [PRESET PROGRAM] or [PROGRAM KEY] [n] [PRESET] depending on controller	Range 1-99.
Run Preset Sequence	[PRESET SEQUENCE]	Not available on 6000-Series keyboard.
Program Preset Sequence	Save from sequence edit mode on keyboard.	Action varies depending on keyboard.
Run Preset Tour	[PRESET TOUR]	Not available on 600-Series keyboard.
Program Preset Tour	Save from tour edit mode on keyboard.	Action varies depending on keyboard. Preset list for tour is the same as that for the preset sequence.
Run Pattern	[n] [PRESET TOUR]	n can be 1, 2 or 3. Not available on 6000-Series keyboard.
Operate Relay	[AUX1]	Toggle action. Not available if any alarms are programmed to operate the relay.
Enter OSD menu mode	[MENU] On a 6000-Series keyboard the [GLOBAL ON] key is used.	Recall Preset 95* or Recall Preset 2* twice within 2 s also operates as the Menu function.
OSD menu navigation	[SET], [UP], [DOWN], [LEFT], [RIGHT]. On a 6000-Series keyboard the keys are: [GLOBAL OFF] [PAUSE] [MULTISCREEN] [REWIND] [FAST FWD]	If OSD menu mode was entered using Recall Preset 95* (or Recall Preset 2* twice within 2 s) Recall Preset 3 will also operate as the Set function and the joystick will operate as Up, Down, Left and Right (the joystick can be switched between cursor movement and camera control by Recall Preset 1).

*) The presets used to access the OSD are programmable via the XTU

Alarms

When using Molynx V3 protocol in conjunction with a V3i telemetry matrix it is possible to send alarms back over the telemetry link. It is necessary to configure the V3i to have bi-directional telemetry on the channel being used and for the appropriate camera alarms to be enabled. Also, on the Solaris™, the alarms must be configured to have Remote Reporting enabled.

Only the tamper and alarms 1-6 may be sent back, alarm 7 is not usable in this way. The mapping is such that the tamper is the first alarm in the block of 8 camera alarms, followed by alarms 1-6.

With a controller other than a V3i it is not possible to use bi-directional telemetry hence remote reporting of alarms is not available. Use normal Molynx - not Molynx V3 - telemetry in these instances.

12.4.2 PCCON, PCCON 1-way and PCCON MULTIDROP

NOTE

RS485 connection; 9600 baud, even parity, 8 data bits, 1 stop bit.
Tested using a PC running Hyperterminal with direct connection to serial port

Operation	User command	Notes
Return Status	@1	Returns camera number and latched functions status.
Select Camera	@3, n	(Multidrop only) Selects camera n as the current camera, disabling all others.
Camera Function On	@5, n	Home (n=1), Pan Right (2), Pan Left (3), Tilt Up (4), Tilt Down (5), Zoom In (6), Zoom Out (7), Focus Far (8), Focus Near (9), Iris Close [10], iris Open [11], AutoIris [20], LensSlow (22), AutoFocus (23) are implemented. Also Lamps (21) switches the unit from day to night mode (colour/mono version only).When in OSD mode (and only after OSD mode is accessed using a preset as detailed below) Pan/Tilt commands from the controller are sent as Camera Setup commands RIGHT/LEFT/UP/DOWN (but see also Recall Preset 1 below).
Camera Function Off	@6, n	Pan Right (n=2), Pan Left (3), Tilt Up (4), Tilt Down (5), Zoom In (6), Zoom Out (7), Focus Far (8), Focus Near (9), LensSlow (22), AutoFocus (23) are implemented. Also Lamps (21) switches the unit from night to day mode (colour/mono version only).When in OSD mode (and only after OSD mode is accessed using a preset as detailed under Recall Preset below) Pan/Tilt commands from the controller are sent as Camera Setup commands RIGHT/LEFT/UP/DOWN (but see also Recall Preset 1 below).
P/T Speed	@7, p, t	0 to 100% for each.
Recall Preset	@8, n	Range 1-99 (not 95). Recall Preset 95* or Recall Preset 2* twice within 2 seconds sends the Camera Setup Mode 'MENU' command. When in OSD mode Recall Preset 1 toggles between sending Pan/Tilt commands as PAN/TILT and sending them as CURSOR RIGHT/LEFT/UP/DOWN. When in OSD mode Recall Preset 3 sends the SET command.
Program Preset	@9, n	Range 1-99.
Preset Sequence Recall	@10	
Preset Sequence Program	@11, n, p1 … pn, d	2-16 (n) positions. Sets sequence/tour positions (p1…pn) (range 1-99) and dwell time (d) (range 1-255s).
Preset Tour Recall	@12	
Preset Tour Program	@13, s1, …, s16, d1, …, d16	Programs tour speeds and dwells (16 of each). Presets are the same as those programmed with the Preset Sequence Program command. Values are ignored for unused positions.
Variable Speed Preset Recall	@16, p, s	Preset range 1-99; speed range 1-100%.
Relay Status	@26, 1	Return relay status (must be relay 1). 0=open, 1=closed
Relay Control	@27,1,f	Operate relay (f=0 to turn off, f=1 to turn off). Must be relay 1.

Operation	User command	Notes
Return Preset Sequence Information	@39	Returns preset sequence last downloaded to the XTU. Note that this data is the last which was sent to the XTU and, for example if the sequence was subsequently re-programmed using the OSD, it may not be the same as the sequence stored in the Dome unit.
Return Preset Tour Information	@40	Returns preset tour last downloaded to the XTU. Note that this data is the last which was sent to the XTU and, for example if the tour was subsequently re-programmed using the OSD, it may not be the same as the sequence stored in the Dome unit.
Camera Function All On	@41, n	Supports Lamps (n=6), LensSlow (7), AutoFocus (8).
Camera Function All Off	@42, n	Supports Lamps (n=6), LensSlow (7), AutoFocus (8).
Camera Setup (OSD menu command)	@47, n	Sends the OSD menu command for Set (n=0), Up (1), Down (2), Right (3), Left (4), Menu (5).
Return Software Version	@55	Returns XTU software version number (major and minor numbers).

*) The presets used to access the OSD are programmable via the XTU.

The following responses are implemented

OK	Command actioned correctly
ER	Syntax error or parameter error
NC	No control permitted
NI	Command not implemented
CS	Checksum error

Some commands return more information as detailed in the PCCON specification. These are @1, @26, @39, @40 and @55. In addition, if a checksum is sent with the command it will be returned in the response. (See the full PCCON3 specification for details).

If the protocol is set to 'PCCON 1-Way' no responses will be returned under any circumstances.

If the protocol is set to PCCON multidrop, @3 must be used to select the required camera before any commands will be processed.

12.5 Use with 3rd party controllers

It is possible to configure the Solaris™ Dome to be controlled via RS485 using a number of other manufacturer's controllers. When using a controller other than those offered by Siemens or Bewator (incorporating Molynx technology); there may be variations in the actions a user must take in order to perform a particular task.

Where there is a lack of consistency between controllers, the Solaris™ Dome will attempt to overcome these problems. It is therefore necessary on occasion to use buttons on a controller to perform a different operation to that which may be explained in the controllers manual. This is sometimes required to fully utilise the functionality of the Solaris™ Dome.

The following third party protocols are implemented and may be selected from the PROTOCOL menu:

- Pelco D
- Pelco P
- Ernitec ERNA
- VCL
- Vicon
- Videmech Universal
- Philips
- Photon
- TTY

NOTE

TTY mode is used for communication with a PC for firmware upgrades and should not be selected in normal use.

Details for the functions supported in these protocols are listed below.

12.5.1 Pelco P & D protocols

NOTE

Pelco P

RS485 connection; 2400 or 4800 baud selectable, no parity, 8 data bits, 1 stop bit. Camera addressing is 0-31 for cameras 1-32.

Pelco D

RS485 connection; 2400 baud, no parity, 8 data bits, 1 stop bit. Camera addressing is 1-255 for cameras 1-255.

Tested using PELCO Universal Keyboard KBD300 + CM6700 Matrix.

Operation	User action	Notes
Pan / Tilt /Zoom / Focus	Joystick for pan/tilt/zoom, [NEAR] / [FAR] for focus	When in OSD cursor mode Pan / Tilt operate as cursor right / left / up / down (but see also Recall Preset 1 below).
Iris	[OPEN] / [CLOSE]	Only operates when exposure priority is set to KEYBOARD.
AutoFocus On	[1] [F4]	Activates Auxiliary 1 function.
AutoFocus Off	[1] [F5]	Deactivates Auxiliary 1 function.
Night Mode	[4] [F4]	Activates Auxiliary 4 function. Switches camera to night mode (colour/mono version only).
Day Mode	[4] [F5]	Deactivates Auxiliary 4 function. Switches camera to day mode (colour/mono version only).
One-Touch White Balance	[OPEN]	If one-touch white balance is enabled in OSD and exposure priority

Operation	User action	Notes
		is not set to KEYBOARD.
Recall Preset	[n] [PRESET]	Range 1-89.Preset 95* or Preset 2* twice within 2 seconds functions as the OSD Mode 'MENU' command. When in OSD mode Preset 1 switches the joystick between cursor and camera control. When in OSD cursor mode Preset 3 operates as SET.
Store Preset	[n] hold [PRESET]	Range 1-89.
Run Pattern	[PATTERN]	
Enter OSD Menu Mode	[9] [5] [PRESET] or [2] [PRESET] [2] [PRESET] within 2 seconds.	Recall Preset 95* or Recall Preset 2* twice within 2 seconds functions as the OSD Mode 'MENU' command.
Navigate OSD Menu Mode	Joystick for Up/Down/Left/Right.[3] [PRESET] for Set.	When in OSD mode Recall Preset 1 switches the joystick between cursor and camera control. When in OSD cursor mode Recall Preset 3 operates as SET

* The presets used to access the OSD are programmable via the XTU.

12.5.2 Ernitec ERNA protocol

NOTE

RS485 connection; 2400 baud, no parity, 8 data bits, 1 stop bit.
Camera addressing is 0-254 for cameras 1-255. Also responds to broadcast address 255.
Tested using Ernitec Keyboard 1503M.

Operation	User action	Notes
Pan / Tilt /Zoom / Focus	Joystick for Pan/Tilt/Zoom,[FN] / [FF] for Focus	When in OSD cursor mode Pan / Tilt operate as cursor right / left / up / down (but see also Recall Preset 1 below).
Iris	[OPEN] / [CLOSE]	Only operates when exposure priority is set to KEYBOARD.
AutoIris On	[AUTO] [OPEN] or [AUTO] [CLOSE]	Overridden automatically on a manual iris operation.
AutoFocus On	[AUTO] then either [FN] or [FF]	
AutoFocus Off	[FN] or [FF]	Manual control overrides autofocus.
Night Mode	[4] [AUX ON]	Activates Auxiliary 4 function. Switches camera to night mode (colour/mono version only).
Day Mode	[4] [AUX OFF]	Deactivates Auxiliary 4 function. Switches camera to day mode (colour/mono version only).
One-Touch White Balance	[IC]	If one-touch white balance is enabled in OSD and exposure priority is not set to KEYBOARD.
Recall Preset	[n] [PRESET]	Range 1-99. Preset 95* or Preset 2* twice within 2 seconds functions as the OSD Mode 'MENU' command. When in OSD mode Preset 1 switches the joystick between cursor and camera control. When in OSD cursor mode Preset 3 operates as SET.
Start Preset Sequence	[PRESET SEQUENCE]	Starts Tour 1.
Save Preset	[n] [ESC] [PRESET]	Range 1-99.
Insert Preset into Stack	[n] [SHIFT]+[INS]	Appends specified preset to end of current tour if possible**. Speed = 100%, Dwell = currently selected dwell.
Delete Preset from Stack	[n][SHIFT]+[DEL]	Deletes the last occurrence of the specified preset from the tour** (if present) and moves the presets above it down by one position. Leaves any other occurrences of the same preset in the tour intact.
Clear Stack	[ESC] [AUX OFF]	Clears the tour**.
Sequence Dwell Time	[n] [TIME]	Sets the dwell time used by the next Insert Preset into Stack command*.
Enter OSD Menu Mode	[9] [5] [PRESET] or[2] [PRESET] [2] [PRESET] within 2 seconds	Recall Preset 95* or Recall Preset 2* twice within 2 seconds functions as the OSD Mode 'MENU' command.
Navigate OSD Menu Mode	Joystick for Up/Down/Left/Right.[3] [PRESET] for Set.	When in OSD mode Recall Preset 1 switches the joystick between cursor and camera control. When in OSD cursor mode Recall Preset 3 operates as SET.

* The presets used to access the OSD are programmable via the XTU.

** It is recommended that the OSD is used to setup a Tour.

12.5.3 VCL protocol

NOTE

RS485 connection; 9600 baud, no parity, 8 data bits, 2 stop bits.
Camera addressing is 0-127 for cameras 1-128.

Tested using Honeywell HKJMSTP-00 keyboard and HMAX081-00 matrix.

Operation	User action	Notes
Pan / Tilt /Zoom / Focus	Joystick for Pan/Tilt/Zoom,[FN] / [FF] for Focus	When in OSD cursor mode Pan / Tilt operate as cursor right / left / up / down (but see also Recall Preset 1 below).
Iris	[IRIS+] / [IRIS -]	Only operates when exposure priority is set to KEYBOARD.
AutoIris On	[AUTOIRIS]	Overridden automatically on a manual iris operation.
AutoFocus On	[FOCUS AUTO]	
AutoFocus Off	[FN] or [FF]	Manual control overrides autofocus.
Day Mode / Night Mode	[AUX]	Toggle action. Switches camera between day and night modes (colour/mono version only). It is not possible to indicate the current state on the keyboard.
One-Touch White Balance	[IRIS -]	If one-touch white balance is enabled in OSD and exposure priority is not set to KEYBOARD.
Recall Preset	[n] [PRESET] or use one of [PRESET 1], [PRESET 2], [PRESET 3], [PRESET 4]	Range 1-99.Preset 95* or Preset 2* twice within 2 seconds functions as the OSD Mode 'MENU' command. When in OSD mode Preset 1 switches the joystick between cursor and camera control. When in OSD cursor mode Preset 3 operates as SET.
Start Preset Tour	[1] [AUTOPAN]	Starts Tour 1.
Save Preset	hold [PRESET], press [n], release [PRESET]	Range 1-99.
Enter OSD Menu Mode	[9] [5] [PRESET] or [PRESET 2] [PRESET 2] within 2 seconds	Recall Preset 95* or Recall Preset 2* twice within 2 seconds functions as the OSD Mode 'MENU' command.
Navigate OSD Menu Mode	Joystick for Up/Down/Left/Right. [PRESET 3] for Set.	When in OSD mode Recall Preset 1 switches the joystick between cursor and camera control. When in OSD cursor mode Recall Preset 3 operates as SET.

* The presets used to access the OSD are programmable via the XTU.

12.5.4 Videmech Universal protocol

NOTE

RS485 connection; 9600 baud, odd parity, 8 data bits, 1 stop bit.
Camera addressing is 1-254 for cameras 1-254. Also responds to broadcast address 255.

Tested using Videmech Vertex keyboard.

Operation	User action	Notes
Pan / Tilt / Zoom / Focus	Joystick for Pan/Tilt, [ZI] / [ZO] for Zoom, [FN] / [FF] for Focus	When in OSD cursor mode Pan / Tilt operate as cursor right / left / up / down (but see also Recall Preset 1 below).
Iris	[IO] / [IC]	Only operates when exposure priority is set to KEYBOARD.
AutoFocus On	[AUX 1] on	
AutoFocus Off	[AUX 1] off	
Night Mode	[LAMPS] on	Lamps on switches camera to night mode (colour/mono version only).
Day Mode	[LAMPS] off	Lamps off switches camera to day mode (colour/mono version only).
One-Touch White Balance	[IC]	If one-touch white balance is enabled in OSD and exposure priority is not set to KEYBOARD.

Operation	User action	Notes
Recall Preset	[n] [GO TO PRESET]	Range 1-99.Recall Preset 95* or Recall Preset 2* twice within 2 seconds functions as the OSD Mode 'MENU' command. When in OSD mode Recall Preset 1 switches the joystick between cursor and camera control. When in OSD cursor mode Recall Preset 3 operates as SET.
Save Preset	[n] [LEARN PRESET]	Range 1-99.

* The presets used to access the OSD are programmable via the XTU.

12.5.5 Photon protocol

NOTE

Tested using Photon PCON controller.

Operation	User action	Notes
Pan / Tilt /Zoom / Focus	Joystick for Pan/Tilt/Zoom control for Zoom. Focus control for Focus.	When in OSD cursor mode Pan / Tilt operate as cursor right / left / up / down (but see also Recall Preset 1 below). Two-speed zoom and focus feature of controller not implemented.
Iris	[IRIS OPEN] / [IRIS CLOSE]	Only operates when exposure priority is set to KEYBOARD.
One-Touch White Balance	[Iris close]	If one-touch white balance is enabled in OSD and exposure priority is not set to KEYBOARD.
Recall Preset	'PRESET SHOT' [A]-[H] keys for presets 1-8. Use [*] and [A]-[H] for presets 9-16.	Range 1-16. Recall Preset 2* ('B') twice within 2 seconds functions as the OSD Mode 'MENU' command. When in OSD mode Preset 1 ('A') switches the joystick between cursor and camera control. When in OSD cursor mode Preset 3 ('C') operates as SET.
Program Preset	Turn [PRESET STORE] key and use 'PRESET SHOT' [A]-[H] keys for presets 1-8. Use [*] and [A]-[H] for presets 9-16.	Range 1-16.

* The preset used to access the OSD is programmable via the XTU.

12.5.6 Vicon protocol

NOTE

RS422 connection; 4800 baud, no parity, 8 data bits, 1 stop bit.
Camera addressing is 1-255 for cameras 1-255.

Tested using Vicon Keyboard 1300X-DVC.

Note that since the keyboard is RS422 it is necessary to use a conversion unit from RS422 to RS485 between the keyboard and the Solaris™ XTU.

Operation	User action	Notes
Pan / Tilt /Zoom / Focus	Joystick for Pan/Tilt/Zoom,[ZOOM IN] / [ZOOM OUT] [FF] for Zoom, [FOCUS NEAR] / [FOCUS FAR] for focus.	When in OSD cursor mode Pan / Tilt operate as cursor right / left / up / down (but see also Recall Preset 1 below).
Iris	[IRIS OPEN] / [IRIS CLOSE]	Only operates when exposure priority is set to KEYBOARD.
AutoIris	[AUTOIRIS]	Must be off to allow manual iris control.
AutoFocus On	[AUX 2] on	
AutoFocus Off	[AUX 2] off	
Night Mode	[AUX 3] on	Activates Auxiliary 3 function. Switches camera to night mode (external version only).
Day Mode	[AUX 3] off	Deactivates Auxiliary 3 function. Switches camera to day mode (external version only).
One-Touch White Balance	[Iris Close]	If one-touch white balance is enabled in OSD and exposure priority is not set to KEYBOARD.

Operation	User action	Notes
Recall Preset	[PP ENTER] n [PP ENTER]	Range 1-99. Preset 95* or Preset 2* twice within 2 seconds functions as the OSD Mode 'MENU' command. When in OSD mode Preset 1 switches the joystick between cursor and camera control. When in OSD cursor mode Preset 3 operates as SET.
Start Preset Sequence	[A/P]	Autopan function starts tour. Autopan indicator will not be lit however.
Save Preset	[PROG] [PP ENTER] [n] [PP ENTER]	Range 1-99. [PROG] is switch on rear of keyboard.
Enter OSD Menu Mode	[PP ENTER] [9]* [5]* [PP ENTER] or [2]* [PPENTER] [2]* [PP ENTER] within 2 seconds.	Recall Preset 95* or Recall Preset 2* twice within 2 seconds functions as the OSD Mode ‘MENU’ command.
Navigate OSD Menu Mode	Joystick for Up/Down/Left/Right. [PP ENTER] [1] [PP ENTER] to toggle between cursor and camera control. [PP ENTER] [3][PP ENTER] for Set.	When in OSD mode Recall Preset 1 switches the joystick between cursor and camera control. When in OSD cursor mode Recall Preset 3 operates as SET.

* The presets used to access the OSD are programmable via the XTU.

12.5.7 Philips protocol

NOTE

RS485 connection; 9600 baud, no parity, 8 data bits, 1 stop bit.

Tested using Forward Vision Philips CamSet simulator V6. (NB - some bugs in this simulator prevent complete testing, e.g. it is not possible to set a camera address above 256, also it is not possible to pan and tilt at the same time. However it is believed the XTU software will operate correctly).

Operation	User action	Notes
Set Camera Address	[n] [SET CAMERA ADDRESS]	Addresses 1-512 supported (simulator will only support 1-256).
Pan / Tilt / Zoom / Focus	[LEFT] / [RIGHT] / [UP] / [DOWN] / [ZOOM IN] / [ZOOM OUT] / [FOCUS NEAR] / [FOCUS FAR]	Opcodes 2 (fixed speed), 4, 5 and 8 (timed command) supported for P/T/Z/F. Opcode 6 (timed command) supported for Z/F. When in OSD cursor mode Pan / Tilt operate as cursor right / left / up / down (but see also Recall Preset 1 below).
Iris	[IRIS OPEN] / [IRIS CLOSE]	Only operates when exposure priority is set to KEYBOARD and when Man Exp is on.
AutoIris	[Man Exp]	If off this will override manual iris control.
AutoFocus On	[MAN FOCUS] off	
AutoFocus Off	[MAN FOCUS] on	
Night Mode	[IR] on	Switches camera to night mode (external version only)
Day Mode	[IR] off	Switches camera to day mode (external version only)
One-Touch White Balance	[Iris Close]	If one-touch white balance is enabled in OSD and exposure priority is not set to KEYBOARD.
Recall Preset	[n] [SHOT]	Range 1-10 (in simulator, 1-99 supported). Preset m* or Preset 2* twice within 2 seconds functions as the OSD Mode ‘MENU’ command. When in OSD mode Preset 1 switches the joystick between cursor and camera control. When in OSD cursor mode Preset 3 operates as SET.
Start Preset Tour	[START TOUR]	
Save Preset	[n] [SET]	Range 1-10 (in simulator, 1-99 supported)
Enter OSD Menu Mode	[m]* [SHOT] or [2]* [SHOT] [2]* [SHOT] within 2 seconds	Recall Preset m* or Recall Preset 2* twice within 2 seconds functions as the OSD Mode ‘MENU’ command.
Navigate OSD Menu Mode	Joystick for Up/Down/Left/Right.[1] [SHOT] to toggle between cursor and camera control.[3] [SHOT] for Set.	When in OSD mode Recall Preset 1 switches the joystick between cursor and camera control. When in OSD cursor mode Recall Preset 3 operates as SET.

* The presets used to access the OSD are programmable via the XTU.

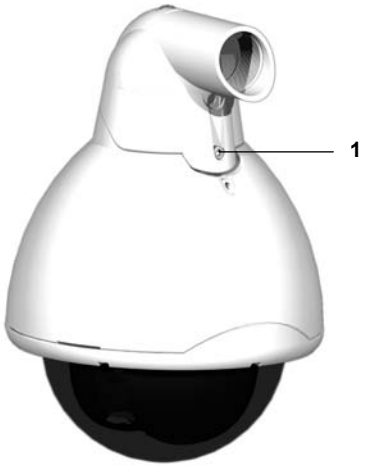
13 Maintenance

This final chapter of the manual covers routine maintenance and specifications.

13.1 Dismantling the Solaris™ Dome

To remove the Solaris™ Dome from its mounting bracket, proceed as follows:

1. Remove the Dome fixing screw.



1	Fixing Screw

2. Hold the Dome unit around its main body and swing it into the horizontal position.

3. Disengage the connectors locking clip.

4. Disconnect the connector from the socket.

NOTE
If necessary, refit the dust cap attached to the lanyard - to avoid corrosion of the connector terminals.

5. Unhook the Dome from its mounting bracket.

13.2 Monthly checks

- Visually check the mounting bracket for signs of defect or corrosion.
- Check the cable runs between the Dome unit and External Telemetry Unit for security of attachment and signs of wear.
- Check all mechanical fixings to the building infrastructure for corrosion, wear and rigidity.
- Issue the customer a written report of any defects (which are beyond the scope of CCTV maintenance) in the building infrastructure or other equipment.
- Check that the Solaris™ Dome / camera is functioning correctly for:
  - Full range of movement, bearing in mind any ‘soft limits’ that may have been set.
  - Slow and fast speeds.
  - Picture quality.
- Clean the bubble if necessary. See ‘Bubble Maintenance'.
- Check fan speed (Diagnostic menu). Although the fan speed changes depending on temperature, it should always run above 50% speed.
- Perform camera lens initialise, followed by a camera reset. See Reset menu in Section 11.1.2: The Camera menu.

13.3 Bubble maintenance

- When handing the bubble, always hold the outer flange if possible. Handle with extreme care as the bubble is easily scratched.
- Under no circumstances should you touch the inner surface of the bubble.
- If debris is present on the inner surface, **do not** wipe it with a cloth. Blow the debris out of the bubble using a filtered air line or a can of compressed air (available from electronics suppliers, e.g. RS).
- Small scratches or scuffs can be removed from the outer surface with the use of a suitable cloth and metal polish (brass cleaner).

14 Disposal

All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities.

This crossed-out wheeled bin symbol on the product means the product is covered by the European Directive 2002/96/EC.

The correct disposal and separate collection of your old appliance will help prevent potential negative consequences for the environment and human health. It is a precondition for reuse and recycling of used electrical and electronic equipment. For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service or the shop where you purchased the product.

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